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I

TO WHAT EXTENT SHOULD PROFESSORS ENGAGED IN RESEARCH BE RELIEVED FROM THE WORK OF INSTRUCTION? [1]

Every good American university has among its professors men of two classes: some whom it values for their ability in teaching old truth, and others whom it values for their ability in bringing out new truth. Men of the former type are commonly said to be engaged in instruction; men of the latter type are commonly said to be engaged in research. These names are somewhat misleading, but they are so current that we cannot avoid using them. Our recitation rooms and lecture halls are in charge of men of the former class. Our laboratories, our museums, and our observatories are supposed to be in charge of men of the latter class. It is hard to say just how large the two groups are numerically, or how far the men of the second group are actually relieved from classroom teaching in our different universities. The lines of demarcation are so shadowy that no statistical inquiry on these points is possible. Nor is such an inquiry necessary for the purpose in hand. The question before us is, not whether we have enough research or enough instruction, but whether we shall gain or lose by an attempt to separate the two more fully than we do at present.

On this question I am prepared to take strong ground in

[1] A paper read before the Association of American Universities at San Francisco, California, March 15, 1906.

favor of the negative. We do not want the two things separated, we want them combined.

The men who are engaged in the development of new truth should be impressed with the fact that it is their duty to *teach* this truth, as well as to discover it. They should understand that research without instruction is as valueless as faith without works. They should feel that they are relieved from classroom duties, not because their work of discovery is something sacred and precious in itself, but because they can teach the kind of truth which they are developing better thru publications and collections and in the form of conversations with advanced students than thru the conventional medium of lecture or recitation. If you tell a man that he is set apart from others in a " research professorship," you encourage him to ignore these teaching duties. You seem to separate his services from those of his colleagues—to value their work for what they give to others and to value his for what it is in itself. There are few men whose character is strong enough to stand the strain which is placed upon them by such a position. It is specially dangerous to men who, having the possibilities of genius, are also subject to its infirmities.

Meantime, the men who are engaged in teaching old truth to college classes should be impressed with the fact that their teaching will be tenfold better if they can *investigate,* as well as teach. If their instruction is based upon research, it will be vital; if their instruction is not based upon research, it will be stale. Under pressure of financial necessity we may, at times, use too much of their strength in the actual work of the classroom; but we should guard ourselves against any educational terminology or educational theory which will countenance the belief that this is a proper policy. No matter how old the subjects which he teaches, we do grave injustice both to an instructor and to his classes, if we utilize him as an instructor alone. Whether he accepts this limitation of his activity as something which he cannot help, or chafes and frets under it as an unjust deprivation, the result is in either case disastrous to the man and to the university that employs him. Between the man who is satisfied because he is second-rate and

the man who is dissatisfied because he is not first-rate there is little to choose. Neither of them represents the kind of teacher we want.

We are not dealing with an ordinary case of division of labor. The great argument for division of labor is that it makes each man more expert in his own field of work by allowing him to concentrate his attention on that field alone, instead of extending it over others. But the college professor who is relieved of the duty of research in order that he may give his whole time to instruction becomes a worse instructor instead of a better one; and he who is relieved of the duty of instruction in order that he may give his whole time to research is, to say the least, liable to the same danger.

But this loss of individual power on the part of the professors is not the only evil to which the creation of a separate class of research professors exposes us. The existence of such a class may become a menace to the general spirit of co-operation and efficiency which is so essential not only to good teaching, but to scientific progress. In selecting such men for special liberty, we may unconsciously restrict that general liberty of thought and teaching which every good university ought to promote. The men thus selected are under strong temptation to care too much for their own ideas and too little for giving stimulus to the ideas of others. They will unconsciously subordinate the laboratories and collections of the university to their own purposes until these laboratories and collections are inadequately used. They will unconsciously stand in the way of younger men who wish to develop researches of their own, because they think that they themselves are appointed to do the research work and that the younger men are hired to act as their helpers. We all remember the conversation which Admiral Dewey is represented by the humorist as having held with Hobson when the latter went out to Manila. "Who are you?" "I'm a hero." "We don't want any such out here; I do all the hero business in Manila." I do not mean that every professor engaged in research is of the type here satirized. There are many investigators who are singularly helpful to their subordinates and who are quite as much interested in

promoting the researches of these subordinates as they are in developing their own. But when we go over the list of these men it will be found that they are just the ones who have the teaching instinct; the ones who are most ready to combine instruction with research; the ones who would most earnestly repudiate the suggestion that the investigators formed a separate class from the teachers, and a higher one. They are the men who are looking, not only for new results, but for new men to produce the results.

As John Morley well says, the essential thing for progress is to leave all ways open for the advent of your hero, for no man can possibly know by which road he will come; and this is as true in the affairs of science as it is in the affairs of government. Every university, as soon as it has money enough to pay men for anything besides classroom work, should see that the opportunities for research are developed as widely as possible among its teaching force. Some will use these opportunities badly; a much larger number will use them well. The aggregate result of such a policy will, I am confident, be profitable to the students and to the teaching force; profitable to the reputation of the university and to the progress of science as a whole. Every instructor who is devoting his time and strength to university work should have the opportunity to give at least one course on a department of his subject for which he really cares—a course which he gives not because the university needs that particular subject or branch of the subject in its schedule, but because he himself wants to study and teach it and believes that he can make something more out of it than others have done before him. In connection with such courses the younger instructors should be given every facility to use the research laboratories in the way that *they* think they ought to be used, rather than in the way the head of the department thinks they ought to be used. I do not mean that we should go so far as to introduce the German system of *docenten*. The arrangements of our classes and the demands upon our teaching force are such that a radical change of this kind seems impossible. But it is perfectly possible and exceed-

ingly important to give our younger instructors some of the advantages which the German system affords.

Of course this will not be an easy thing to attain. There are financial obstacles, and there are also administrative ones. The number of students to be taught in the regular classes is so great that faculty committees will want to use the whole time of the younger instructors for regular work, and will begrudge every hour that is spent in methods which they regard as irregular. The laboratory space is so limited in proportion to the demands upon it that the heads of departments will be inclined to use it all for the researches in which they have confidence, and will doubt the wisdom of putting any part of this limited space under the control of younger men whose work is avowedly experimental, and of whose good judgment the older men are not sanguine. But it is worth while to spend the effort necessary to overcome these obstacles. The real freedom of teaching which exists in a place managed for the young men and not for the old ones makes it far more attractive to progressive and ambitious students. The reduction in quantity of classroom work on the part of the younger instructors is more than compensated by the improvement in quality. The gain from the successful experiments more than compensates the loss from the unsuccessful ones. The existence of a spirit of independent research on the part of a large body of young men makes such a university a better place in which to teach and study than one where a few men of more advanced years, and perhaps more cautious temperament, are engaged in carrying out their own preconceived ideas. Over and over again it has been proved that an atmosphere of independent thought and independent discussion counts for more in stimulating discovery than perfection of instruments or scholarly guidance by those who have already made their reputation. Look back at the history of scientific investigation, and you will find it most active, not where large sums of money are placed in the hands of a few men to facilitate their individual researches, but where those sums, or even very much smaller ones, are distributed among a considerable body of young men working side by side in independent activity.

Some universities will find it relatively easy to give the younger instructors freedom necessary for making discoveries and experiments of their own, and others will find it very difficult; for some have money to spend upon research and others have little. But I am convinced that whether the sum thus available be one thousand dollars, or ten thousand, or a hundred thousand, it is best used by distributing as widely as possible the opportunities which it gives and the chance of using those opportunities in the manner that each man may desire for himself.

But the younger instructors are not the only ones who need more freedom. The older ones also have their burdens, tho of a somewhat different kind. The pressure of routine often lies as heavy upon the experienced man as the pressure of authority lies upon the man who has his career before him; and the better a man teaches, the more his routine duties crowd upon him as he gets older. It is the duty of the university authorities to relieve this pressure. It is suicidal for them to allow a successful instructor to be swamped by the number of students who wish to hear him. He should be given increased time for research, by the diminution of his lecture hours where that is possible, and in any event by the appointment of readers, quiz masters, demonstrators, and other assistants who can relieve him of burdensome parts of his work. It is not necessary that the services of these men should be very expensive. In a university which has a large force of graduate students there are always men on fellowships who can be asked to do this, or men without fellowships who are willing to do it for comparatively small compensation. If a fellow refuses to give this help, holding that he is employed for research and that his time is too valuable for such work, the remedy is simple. Send him away from the university. The more promptly you get rid of him the better. A vigorous policy of this kind is necessary in order to prevent men who have proved their capacity to teach from being overburdened with teaching duties and placed at an actual disadvantage as compared with those who do not teach so well. I have a case in mind where there are two men working side by side in the same subject,

one of whom can teach classes and the other cannot. Under the financial limitations of the department the man who can teach classes has to spend all his time in this way, while the man who cannot teach classes is given time for research; and the man who is thus turned into research because he cannot teach believes that this fact is a badge of superiority instead of inferiority. By giving liberal assistance to our teachers, and by that policy only, can we protect the men who are able to study and to instruct also from the encroachments of those who, being unable to instruct, claim superior facilities for study.

Do not let me be misunderstood in all this. I recognize that there is a great deal of teaching, and of very valuable teaching, which is not done in the classroom and which does not take the form of lectures, of recitations, or even of laboratory supervision. There are some men who naturally teach in these ways; there are others who more naturally teach by their writings, by their conversations, or by their intelligent suggestions for the work of others. These latter forms of teaching are as important as any; and a man who can make his researches available in these ways is as useful an instructor as anyone in the university. A failure to recognize this fact has prevented some of the best men from finding the employment or receiving the salaries which their real work as teachers merited. Those who have seen the value of these men in a university, and have not seen how much teaching they could do outside of the classroom, have supposed that the only way in which to pay them full salaries was to make them "research" professors. Pay them full salaries, by all means; but pay them for their teaching. Let them understand that they are part of the teaching force, and are simply doing their teaching in a different way from some other men. Let them understand that they are not employed for research as distinct from instruction, but for the development and teaching of new truth as distinct from the development and teaching of old truth. Let them see that they are not set apart from their colleagues to be guarded and perhaps sterilized. Let them feel that their research is not valuable until it is made useful to others. Let them understand that withdrawal from the lecture room and

relief from the duties of supervising elementary students carry with them a larger obligation to publish as fully as possible the results of all discoveries; to organize departments intelligently; to train up young men who can teach; and to make liberal room for such men, instead of trying to get in their way when their work becomes popular.

Impress upon the research men an obligation to teach others, and demand that they give evidence that they are meeting that obligation. Free the best teachers from the unnecessary burdens due to their popularity, and insist that they shall avail themselves of the chance thus afforded to make researches of their own. Give to our younger men, who have still to prove what they can do both in teaching and in research, the widest opportunity for independent investigation and independent management of their classes. Thus, and thus only, can we avoid the dangers to which we are exposed at the hands of those who would separate research from instruction.

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II

THE REACTION OF GRADUATE WORK ON THE OTHER WORK OF THE UNIVERSITY[1]

A fundamental difficulty in the discussion of this topic lies, of course, in the absence of fixed conditions, and of anything but a varying terminology to describe them. The term "university" is altogether a shifting concept, even when it is legitimately applied to those institutions which, like the members of this Association and others in the community, do actual university work. The relationship of the college to the university in America, is still, and perhaps always will be, wholly indeterminate except as a general proposition, for those of us—and they are a majority of the whole—who, in the evolution of a system of the higher education have developed the newer university by accretion about the nucleus of the older college, under the dictates of expediency as determined by environment, have perforce evolved the former and retained the latter in positions widely divergent. In some few of our American institutions, university work from the beginning has developed synchronously with the work of the college. In one case at least the general condition of development has been reversed and the college at a subsequent time has been added to the university.

The relation of graduate work to the other work of the composite American university is dependent upon the place which it relatively occupies with regard to the whole: whether, on the one hand, it is a side issue, an accidental growth that has been allowed to develop without far-reaching thought, either of its own perfect fruition, or of its ultimate effect upon the parent stem; or whether, on the other hand, it has been recognizably an articulated part of the whole, a scion carefully

[1] A paper read before the Association of American Universities at San Francisco, California, March 15, 1906.

set, not only to develop itself thru its coherence with the earlier stock, but with a thought to infuse the latter with more energetic life as the result of its presence. Both of these conditions have existed in the development of graduate instruction in America. In some cases, to use another figure, graduate work has seemed to have been viewed very much as a by-product that has appeared in the process of more extended educational production, natural, doubtless, to the time and place, but to a certain extent unwelcome and embarrassing. In these instances, for reasons that have varied with the fundamental conditions present, it has been accepted with toleration and has ever been allowed to increase, but it has not been conspicuously encouraged. In some of our institutions, partly as a consequence of such an attitude toward it, graduate work still concessively occupies a relatively small and insignificant place in the program of studies, with the necessary accompaniment of a small body of instructors to direct such work and a small body of students to pursue it.

In others of our institutions, however, graduate work even in its beginnings has been recognized in its true aspect as a significant sign of the times, as the inevitable concomitant of more enlightened cultural conditions in the community, and these institutions have not only readily accepted it as part of an order changing, but by every means in their power have furthered it as a welcome expansion of educational opportunity. These institutions, by their attitude of approval, have given to graduate work an undoubted prestige in their body politic. With the development of the work that in many cases has naturally and logically resulted, there has been a necessary increase in the corps of instruction, and students have been attracted thru the advantages offered by the better equipment.

The relation of graduate work to the other work of a given institution and the consequent reaction that will be exerted by the one upon the other will depend upon the conditions enumerated and others coexistent with them. It will depend upon the place which each has been accorded in the whole, and it will depend upon the attitude which the two have ultimately acquired in relation to each other. It will depend upon whether

the one is rigidly superimposed upon the other, as is the case in some institutions, or whether the two are carefully articulated, as is the case in others. It will depend upon the relative amount of graduate work actually accomplished; upon the size of the body of instructors who conduct it in relation to the entire corps of instruction in the university, and upon the number of students who pursue it in relation to the entire student body. It will depend, too, to no small extent, upon the constitution of the body of graduate students; upon whether its members are sordid and self-seeking, and, consequently, in a measure aloof, as we have been told in some cases they are, or whether, as in other cases they appear to be, they are a sympathetic and patriotic part of the whole, who, even more than the rest, because of a maturer and better appreciation of opportunities and purpose, are eagerly and enthusiastically bent upon enkindling their torches with the common fire.

At Columbia University the conditions of relationship between graduate and undergraduate work have been in action long enough to permit, along definite lines, a fairly accurate estimate of results in this particular environment. The amount, too, of graduate work, from the standpoint of the number of courses of instruction given, the size of the body of instructors giving them and the student body taking them, is relatively so large and important that an influence is inevitably at hand, if at all, and should plainly be discernible.

Historically, the development at Columbia has been the gradual growth of graduate work about the pre-existent and coexisting college. There has been at no time a forcible expansion of such work, and except in a single case of the gift of an endowment for the specific purpose of teaching a remote, but important, subject—the Chinese language and literature—it has only been supplied because it has been demanded by intending students. The demand for graduate instruction has naturally arisen and the provision of increased opportunity for it has paved the way for more.

Graduate work at Columbia is intimately articulated with undergraduate work along lines that are constantly broadening. In the academic year 1904-05, to cite the last complete statistics

at hand, in a net total of 4981 students in the whole corporation inclusive of students in the Summer Session of 1904, but not of students in extension courses, there were enrolled under the three non-professional graduate faculties, Philosophy, Political Science, and Pure Science — the *Philosophische Fakultät* of the German universities—782 students, a great majority of whom were candidates for the degree of Master of Arts or Doctor of Philosophy, or both. These were students who, to quote a late presidential report, were "devoting themselves to pure scholarship and methods of investigation, with no professional end in view, unless it be teaching or public service in some capacity." This total of 782, however, does not include 136 college graduates studying under the professional faculties of law, medicine, and applied science, who are also candidates for the degree of A. M. or Ph. D.[2]

The three faculties enumerated are *per se,* and in the sense of this paper, the graduate schools of the University, altho since 1903 the Law School has also been a graduate school. Graduate students as candidates for the professional degrees are also widely distributed thruout the University. This same year, 45 per cent. of the enrollment in the Medical School, 14.8 per cent. of that in Fine Arts, and 13 per cent. of that in the Schools of Applied Science, were made up of the holders of degrees. There were actually in residence during this year under the corporation proper 1378 students who had already been graduated from a college or scientific school, or a European institution of equal rank, or 47 per cent. of the entire body.

The total number of students enrolled under the corporation proper in 1904-05 was 2935; of these 782, as has been stated, or 26.6 per cent. of the whole, 559 of them men and 223 women, were the students doing the actual graduate work of the University under its non-professional faculties. The degrees or their equivalents already held by these students were widely distributed, in that 219 different institutions, 176 domestic, and 43 foreign, were represented by their graduates.

For us, at Columbia, the development of the graduate work of the university has meant the development of the college

[2] Columbia University, Annual reports, 1905, p. 203.

It has brought with it a notable expansion of the program of study in which the undergraduate student has been fully allowed to share; it has furnished him with a stimulus and an added incentive; it has widened his horizon by his contact with students of a superior culture and a broader outlook; and it has in very many cases induced him to pursue further a predilection which the ordinary opportunities of the college curriculum would never have brought into existence.

The influence of graduate work upon undergraduate work is most directly and unequivocally exerted at Columbia in those courses of instruction which, altho primarily graduate, under the arrangement of the program of study are open alike to graduates and to properly qualified undergraduates, from the nature of the case, regularly and usually members of the two upper classes of the college. There are offered in this way during the present academic year, under 195 individual instructors, no less than 300 courses, open both to graduates and as electives to such undergraduates as are qualified to pursue them. Under the conditions that prevail at Columbia the influence that is exerted in these courses is only in the rarest instances reciprocal. In the great majority of cases, and overwhelmingly, it is exerted from above downward. It is the graduate work which *gives*, and the undergraduate work which, as inevitably, *takes* as a result of the contact.

The opening of courses primarily graduate to undergraduate students and wholly apart from the fact as to whether the undergraduate is in a large number or a small number in such courses, is to elevate the character of the instruction. The effect upon the undergraduate student of the presence of graduate students in these courses—some of which, with the development of the college curriculum, must still have been offered as electives in the absence of the graduate instruction—is to stimulate him to increased effort by bringing him into intimate contact, in the classroom and outside of it, with fellow students who, in the main, are maturer and of greater experience, and who are characteristically far more serious and eager in the pursuit of knowledge—of setting him, in short, a pace which he would not always have taken of his own initiative. The

effect upon the instructor in such courses is to put him on his mettle and to induce him to give out his best, for he is conscious that his composite public is already possessed of a wider standard of judgment than is possible to the undergraduates of the home institution who have felt only home influence.

The presence of graduate work elevates the whole tone of instruction in the institution—in any institution—by making it imperatively necessary to have in the corps of instruction of the university, not merely the teacher who teaches, but much more largely than is either possible or useful in the college the teacher who also investigates. And in just this way it widens the opportunity of the undergraduate student by giving him, in addition to the instruction which under the conditions of the college curriculum is of necessity first of all an exposition of accumulated knowledge, more surely than before a premonition, at least, of the spirit and method of investigation which, thru its own discoveries, is adding to the ultimate total of knowledge. It has not only increased in quantity and intensified in quality the work performed by the undergraduate student, but by this demonstration of the meaning of receptive scholarship on the one hand, and of productive scholarship, on the other, it has immeasurably broadened his horizon and pointed out a way for future usefulness.

The students of the non-professional graduate faculties who are pursuing their chosen lines of advanced study and investigation and the teachers who, in directing them, are continually breaking new ground, "represent," as President Butler writes in the annual report of 1903, "the very heart of the University." "In the Schools of Philosophy, Political Science, and Pure Science," he continues, "students and teachers are associated together in pushing forward the boundaries of human knowledge and in increasing the measure of human appreciation in some way, great or small. It is this spirit of investigation, of the scholarship which produces and not merely relates, that gives to these schools their tone, and to the university as a whole its best inspiration."

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III

METHODS OF TEACHING ARITHMETIC[1]

As far back as October, 1892, I advocated in the EDUCATIONAL REVIEW (IV: 277-286), a system of implanting elementary mathematical ideas in the minds of pupils, with especial reference to the fundamental conceptions of number and quantity. While eminent masters in education had repeatedly pointed out the advantages to be gained by teaching arithmetic in a concrete form, their views had not up to that time taken effective practical form, at least in our own country. The purpose of my paper was to set forth a system of visible and graphical representation of arithmetical operations, illustrated by appropriate exercises, by which the advantage of apprehending mathematical ideas in a concrete form should be gained. I am not aware that this utterance excited any attention at the time, nor do I know whether it was a factor in the recent tendency of arithmetical teaching in the direction which it advocated. However this may be, the whole trend of recent experience and discussion among practical teachers is in the direction of the ideas advocated in the paper referred to; and a system practically identical with the one there found is now embodied in several recent arithmetics, even to the extent of proposing problems and exercises almost identical with those suggested in the paper. This fact encourages me to present a more complete development of the results of thought and observation during the thirteen years which have elapsed since my former utterance. To do this completely it is necessary to commence at the foundation and inquire into the main purposes which we should have in view in arithmetical teaching.

Without going into details, a very little thought will, I think, make it clear that the main end of mathematical teaching—we

[1] Read before the Department of Superintendence of the National Educational Association at Louisville, Ky., February 28, 1906.

might say of teaching generally—is to store the mind with clear conceptions of things and their relations. In the case of elementary arithmetic, the things we first deal with are numbers. It follows that a clear conception of numbers and their relations is the end toward which our teaching should be directed. I think every reader who has carefully studied the mind of the apparently dull pupil will agree that the real difficulty is to give him an insight into the nature of the problem he is to solve. He may be able to repeat the words; but you find that they do not make a sufficiently definite impression on his mind. Clear and accurate conceptions of the relations of numbers are therefore to be generated.

To show what we mean by clear conceptions of number, we must stray into the field of psychology. We may conceive of the brain of a man as a microcosm containing within its narrow limits all that the individual knows of the structure, laws, and history of the entire universe. There are two universes, the microcosm within us and the macrocosm without us. The success of the individual, not only in all the applications of science, but in every branch of endeavour, depends on the accuracy and completeness with which the processes at play in the subject with which he is dealing are represented by corresponding processes in his own mind.

Admitting that everything known of external nature has its image in the mind of the man who knows it, I cannot but regard it as a defect in psychological nomenclature that there is no one general term used to express this mental image of an external object and nothing else. Passing over the question of nomenclature, let me make clear the thought. To take a familiar example, we all have an idea of the house in which we live. We can think of the building and the arrangement of its rooms, when it is out of sight, as if we had a picture of it in our mind's eye. This picture is not a flat plan, but rather a model embodying the arrangement of all the rooms in the house. What is true of the house is true of all human knowledge and of its applications. The engineer can in his mind erect bridges in which the actions of stress and strain shall correspond to those in the actual bridge; in the mind of the

historian, events of human history and the motives which guided them may be repeated at any moment; in the mind of the chemist, compounds react as in the laboratory, and so on thru every branch of knowledge.

From this point of view my main contention is that the first and great object in training the growing child in arithmetic is to store his mind with clear and accurate conceptions of numbers, magnitudes, and their mutual relations, which he shall be able to apply with readiness in any actual case that may arise. That I have elaborated this point so fully is due to the fact that it should never be allowed to drop out of sight in our teaching. The latter must be arranged from the beginning with this great end in view.

Granting this, the next question in order is that of method. Here psychology can supply us with a guiding rule. However abstract may be the ideas which we wish to implant, they must originate in sensible objects. But they must not stop there, because generalization, conscious or unconscious, is to be aimed at from the beginning. Let me illustrate my meaning by taking the number 10 as an example. I think psychologists will agree that there is no such thing in the human mind as a conception of the number 10 otherwise than as a quality characterizing 10 distinct objects. A written or verbal symbol may be used for the number, but this is not a conception of it. The point is, that the word or symbol being pronounced or shown, the pupil should at once conceive of 10 objects as distinct from either 9 or 11, and should be able to handle that conception in all the ways that it can be handled.

Here, there is an obvious advantage in selecting such objects as have the least number of qualities to distract the attention from the fundamental idea of number. Hence, I prefer that the counting should be made upon small dots, circles, or other objects with few qualities than upon the more interesting objects which are met with in every-day life. In this suggestion I may seem to run counter to views which are entertained by very high authorities in education. There is, I admit, a very strong argument in favor of the view that the principles of arithmetic are best mastered when the child is taught to

consider them as growing out of the problems that actually confront him in his daily walks. I fully agree that the practice thus suggested is one that should be carried out, but we must not depend wholly upon it. Perhaps I am a little old-fashioned, but I would not abandon the idea of applying the pupil's nose to the grindstone. I have no objection to the grindstone being interesting, and certainly do not wish to make it painful, but I want some drill in thinking of numbers and their relations as dissociated from the actual objects concerned. Just as rapidly as this power is attained in each and every branch, I am willing to see the interesting substituted for the instructive.

The idea of arranging subjects in order and completing one before passing to another is plausible. But experience shows that it has its limitations. The great principle which experience especially enforces is the educational value of frequent reiteration of very short and easy lessons. This is one of the main features of the system I am trying to develop.

Now, as my object is a purely practical one, it is necessary to have some idea, however brief, of the method by which the purpose in view can be most readily attained. The system I advocate may be called *visible arithmetic*. Taking up subjects in much the order of the traditional arithmetic, the first would be Numeration. Visible numeration consists in counting and arranging objects in tens and in powers of ten. At the earliest age where simple arithmetic can be commenced, whether in the kindergarten or the primary class in school, I should teach the child to count and arrange things in tens; then to arrange real or imaginary tens in hundreds, and so on. In accordance with the general principle which I have laid down, I would begin with rows, each comprising ten dots, or kernels of corn, and teach the counting thru ten such rows, making one hundred in all. We could then imagine the results of laying successive 100's in flat layers on top of each other, thus getting the idea of multiples of 100 up to 1000.

It would be psychologically interesting to see whether, in this way, we could plant in the mind what the psychologists call a " number-form " in a better shape than it commonly takes. I suppose we all have vaguely in mind from infancy a certain

arrangement in series of small numbers up to, say, 100. It would be interesting to know whether a more rational arrangement would be gained by this process, but this is not important for teaching purposes.

Next would come the process of adding and subtracting grains of corn, or dots or little o's made on the slate. Methods of doing this are so familiar that I need not dwell upon them. The practice of multiplication and division in this way does not seem to need much exposition. We can repeat a row of any number of dots as often as we please, and count the product. We can divide any number into groups of any smaller number and find the quotient and remainder. All these exercises on the four rules of arithmetic need not take much time. My impression is that you will find, after a very little showing, that the child is able to perform the fundamental rules upon collections of grains of corn, or dots, without devoting much or long continued effort to the process.

The next step would be to extend the operations to continuous quantity as represented by lines and areas on paper or on the blackboard. The addition of lines consists in placing them, or lines equal to them, end to end, thus obtaining a line equal to their sum. Subtraction consists in cutting off from the longer line a length equal to the shorter one. Multiplication by a factor consists in adding together equal lines to a number represented by the factor. Division takes a twofold form. We may either divide a line into a given number of equal parts, thus obtaining a certain length as the quotient, or we may find how many times one line is contained in another, thus obtaining a pure number, or ratio, as the quotient.

Please understand that this system of visible arithmetic is not a substitute for ordinary arithmetic, but an auxiliary to it. Whether it is advisable to master it completely before beginning regular work with figures, or to carry on the two simultaneously, only experience can show.

However this may be, in teaching written arithmetic I would have the pupil make his own addition, subtraction, and multiplication tables, by the aid of countable things. Taking groups of six things—dots or grains of corn—the pupil finds the suc-

cessive products of six by different factors and writes them down in order for himself. He thus knows exactly what the multiplication table means. About using it, I shall presently have more to say. The treatment of fractions in a visible way by dividing lines into parts is an extension of multiplication and division, and does not need development. I therefore pass on to the continuation of the method.

The next subject in order would be Ratio and Proportion. On my plan, the pupil reaches the first conceptions of this subject thru the eye by drawing a pair of lines of unequal length and then other pairs, shorter or longer, in the same ratio to each other. In this way he will see the equality of ratios to be independent of the special lengths of the lines. He can then be gradually exercised in forming for himself an idea of what a ratio means, or how equality of ratios is to be determined by multiplication or division. I would not have measurement with a rule applied, but only eye estimates. This, I may remark, is the general system by which I think we should begin in all cases. The reason for it is that in making eye estimates we depend more completely upon the eye conceptions than when we measure; but as soon as the conception is gained, we may proceed to measurement. Having got the idea of a proportion and the geometric mean, all this can be done without using figures or numbers. When the conception is well implanted, then proceed to numbers.

In connection with proportion would come graphical representation of all the quantities which enter into arithmetical problems. Take, as an example, questions of days' work in plowing a field. We draw a short vertical line to represent a man, or his power. From this line as a base we draw horizontal rectangle to represent the amount of land which the one man can plow in a day of ten hours. If we have several men, we add into one the lines representing them, and combine all the rectangles into one. Then we extend these rectangles to represent the days. To introduce the idea of compound proportion, we suppose a day of eight hours instead of ten hours making a rectangle shorter in proportion. I consider any problem in compound proportion solved when, and only when,

the pupil is able to represent it graphically on this system. I am sure this process would be more interesting than that requiring the use of numbers.

The precise purpose of this course in visible arithmetic is so far from familiar that further enforcement of it may be necessary to its complete apprehension. It must be especially understood that exercises in formal reasoning do not enter into the plan. A power of visualization and giving a concrete embodiment to the abstract ideas are the fundamental points aimed at. If I should express the desire to have a pupil trained from the beginning in the mode of thought of the professed mathematician, I might meet the reply that this was expecting too much of the childish mind. Allow me, therefore, to put the requirement into a slightly different form. I wish the pupil trained from the beginning in the use of those helps to thought which the advanced mathematician finds necessary to his conceptions of the relations of quantities. If a mathematician has no clear conception of an abstract quantity how can we expect a child to have it? The mathematician conceives quantities by geometrical forms and the movements of imaginary visible points. Let us then train the child to represent the simple quantities he deals with by simple auxiliaries of the same kind, adapted to the state of his mind and to his special problems. What I wish him to use is not merely a tool, but a necessary help to thought. The visible arithmetic which I advocate bears the same relation to ordinary arithmetic that the geometric construction of complex variables does to the algebra of the mathematician.

Altho I have spoken of these graphic constructions as merely an auxiliary, I would, after denominate numbers are disposed of, be satisfied with the graphic representation of all solutions required. After this point, I would require very little numerical solution of problems, being satisfied when the pupil is able to construct a graphic representation of the solution. When he can draw proportional lines, explain discount by cutting off and adding fractions of a line to the line itself, and in general show that he can form a clear conception of the practical problems of arithmetic, I should consider that he

knew enough about it, so far as mere numbers are concerned. Everything beyond should be treated by algebraic methods.

Thus far, I have treated only of one main object of arithmetical teaching. But there is another purpose of a different kind, and that is facility in the use of numbers. The pupil must not only know the meaning of multiplication and division, and understand when each is required, but he must be able to cipher rapidly and correctly. My views of the best method of attaining this end are perhaps even more radical than those which I have already set forth. I think it can best be gained by short and frequent daily practice in the routine operations of the four fundamental rules, quite apart from the solution of problems. I would have something analogous to a daily five-minute run in the open air. The reiteration of simple problems after the pupil sees clearly how to conceive them is a waste of time. But this is not so with the exercises designed to secure facility. Leaving details to the teacher, I would outline some such plan as the following:

Let an entire class devote a few minutes every morning to reading or repeating aloud in chorus the addition, subtraction, or multiplication tables until it is ascertained that the large majority of the class has them well by heart. I should not make it a point to have them repeat the tables from memory alone, because I think the result is equally well attained by simply reading aloud. Another exercise would be that of adding columns of figures, following the method of the bank clerk, or of the astronomical computer. It would facilitate this to have the exercises printed on sheets beforehand. Twelve lines of figures would be a good number. The earlier exercises may begin with three in a line; when these are easily done, add columns of thousands, then tens of thousands, and so on. Do the same thing with exercises in multiplication and division. These may seem rather dull exercises, but we can easily add an element of interest by choosing some condiment of which a very little will suffice to flavor an otherwise long and tedious course. The mere act of repeating in chorus will give interest to the exercises. In addition, an element of interest will be given by noting from day to day the gradually diminish-

ing time in which each pupil can complete his exercise and prove its correctness.

Thus far I have spoken only of methods of teaching. But I believe that, if the system which I advocate is intelligently pursued, it will be found practicable to greatly curtail the time spent in simple arithmetic, and thus rearrange the curriculum with the view of disposing of the subject of arithmetic and passing on to algebraic and geometric methods at a much earlier age than at present. In this connection attention may be invited to the report of the Committee of Ten, made in 1892, in which important changes in this direction were proposed. It must be admitted that in making such changes we shall be running counter to the ideas of the general public. When it is proposed to omit commercial and so-called advanced arithmetic from the school course, the reply will be that we are considering only the requirements of pupils preparing for a college course, and that business and commercial arithmetic is a prime necessity with the masses. There being in our country no body of men more influential than that here assembled in wisely directing public opinion on this subject, I beg leave to point out the fallacy in this plausible view. The experience of directors in our great enterprises shows that the best business mathematician is not the one who has taken a course in commercial arithmetic, but who has the best understanding of numbers and quantity in general, obtained by the more advanced courses of a mathematical character. A problem of practical business is best taken up by one who understands it. On the purely practical side that understanding can be better gained in one day by actual experience than by any amount of arithmetic in a course subject to all the drawbacks of being treated as an abstraction.

I once saw an interesting example of this. It was in connection with a building association on an old-fashioned plan, which, I fear, has gone out of vogue. It was a mutual benefit association in which accumulating results of monthly payments thru a term of years were to be equitably divided month by month among the members desiring advances. The mathematical principles involved, if investigated in detail, were so

complex that only a professed mathematician would be able to construct or apprehend their theory. Yet, when the problem was faced as an actual one, the whole process was gone thru with by every-day business men and laborers without the slightest difficulty. Not one of these could have explained the process to a mathematician, but he did it correctly when the concrete case was before him.

We should also try to dispel the current notion that the use of algebraic symbols belongs to a more advanced stage of study than arithmetic. We have advanced a little in the right direction since the time when the signs + and — were considered as belonging only to algebra, and therefore not used in arithmetic. I trust that we shall go further and not only introduce symbolic operations, but the simpler literal symbols at a very elementary stage in the course. Careful examination will show that in its simplest form, algebraic operations are even simpler than arithmetical ones.

Having suggested all these innovations, allow me to sum up in briefest compass the practical conclusions which I draw from a survey of the field:

I. I do not propose that we shall try to train a pupil in abstract mathematical reasoning until he reaches the stage where pure geometry can be advantageously taken up. But, from the very beginning, he should be trained in the faculty of mental insight. This can be done by problems like this, to be answered by thought without making a drawing. Of three houses, A, B, and C, B is 100 meters north of A and C is 100 meters west of B. What is the direction of C from A, and about what would you suppose its distance to be?

II. I regard time spent in the schoolroom poring over problems and trying, perhaps vainly, to see how they are to be solved, as time wasted. Much waste in this way is indeed unavoidable, but our policy should be to reduce it to a minimum by explaining the problem whenever the pupil does not readily see into it for himself.

III. Of course we should train the mind in seeing how to attack a problem. The objection may be made that whenever we help the pupil in this respect, we diminish his power of

helping himself. I admit this to a certain extent, but my solution is that we should devise such problems that the course of thought they require can be seen without spending time in vain efforts. Please let me cite once more the analogy to outdoor exercise. We should all agree that if we coupled the exercise of taking an outdoor run with the requirement of finding out at every few steps what path was to be followed, and put an end to the exercise if this right path could not be found, it would materially detract from the good of the exercise. Let us, then, promote facility in calculation by exercising the pupil in purely straight-ahead work, without requiring him to stop and think what is to be done next.

IV. I have found in my own experience that words are as well and more easily memorized by repeated readings than by the same amount of repetition from memory. If this principle is correct, then we lose nothing by having a multiplication table before the pupil every time he repeats it, so that he shall read instead of memorize it. I do not present this view as a demonstrated fact, but as one worthy of being tested.

V. The plausible system of learning one thing thoroly before proceeding to another, and taking things up in their logical order only, should be abandoned. Let us train the pupil as rapidly as possible in the higher forms of thought and not be afraid of his having a little smattering of advanced subjects before they are reached in regular course. Let us remember that thoroness of understanding is a slow growth, in which unconscious cerebration plays an important part, and leave it to be slowly acquired. A teacher aiming at thoroness might have kept Cayley or Sylvester working half his life on problems of advanced arithmetic without reaching his standard of thoroness. Let us promote the development of higher methods in the earlier stages by introducing algebraic operations immediately after the four fundamental rules.

VI. Separate the actual exercises for acquiring facility in arithmetical operations from the solving of arithmetical problems. If I am right, it will be more conducive to progress to be satisfied with the graphic representations of problems,

without the arithmetical operations of solution, than by actually going over the solution itself.

VII. If I am not straying too far from my theme, I may devote one moment to the extension of the ideas I have advocated to the mensurational side of geometry and physics. As a part of the arithmetical course, let us teach geometrical conceptions, the aim being a correct apprehension of lines, lengths, angles, areas, and volumes as they actually exist in the objects around us, and are to be conceived in thought when these objects are out of sight. Valuable exercises in this respect will be endeavors to estimate a result in advance of calculating it. If a freight car is the subject of measurement, either in thought, or by a picture, let the pupils form the best judgment they can as to the number of cubic meters or of tons of water the car will hold before making the computation. Practice in estimating lengths, angles and magnitudes generally, by the eye, should be part of the elementary course.

I may conclude with a brief statement of what we may hope for by the system, of which the general principles have been outlined. It is, in the first place, the more rapid command of the nature of all those problems which are to be solved by numbers and in the second place facility in performing the necessary operations. To put the system into successful operation requires a well-chosen collection of problems, explanations, and exercises quite different from those with which we are familiar. It also requires, both in the designer of the exercises and in the teacher, a clear idea of the end to be kept in view, and of the best means of attaining it in each special case. Here, my own part must end with the submission of my ideas to the most competent authorities represented in the present assemblage, hoping that the plan will be deemed worthy, at least, of the test of a fair trial.

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IV

THE EDUCATION OF WOMEN[1]

Woman's claims for higher education have been heard, and she is not only availing herself of present opportunities, but is seeking fresh ones. Oxford and Cambridge date back to the twelfth century, but the founding of Newnham was in 1875. Harvard was founded in 1636, but it was not until 1894 that Radcliffe granted degrees to women. Yale began its beneficent career in 1701 and Princeton in 1746, but Mt. Holyoke Seminary did not open its doors until 1837, and college work was not established there until 1888. Vassar's noble work for women dates from 1865, while Barnard is comparatively a child among the women's colleges, since it is only fifteen years old. Wellesley and Smith began college work in the same year (1875), while Bryn Mawr began a decade later. Whatever advantages women have enjoyed from these and other institutions of learning, have been won in the face of prejudice and deep-rooted and time-stained opposition.

Now, it would seem to appear, after an examination of the curriculums of men's colleges and women's colleges, that the latter have been patterned too closely after the model established for the education of men. Students, faculties, and trustees in institutions for the training of young women have been too prone to copy the newest departures in one or more institutions for males. Rarely has there been any thought of adjustment to sex. The idea of the advisability and desirability of a distinct line of differentiation in the making of the courses of study does not seem to have obtained, or if it has obtained, the necessary means and opportunities were not at hand for carrying out varying courses of study. The notion has seemed to be too generally prevalent that whatever was good for a young man

[1] From an Address delivered at the Convocation of Adelphi College, Brooklyn, N. Y.

to learn was equally good for a young woman; that whatever studies the young man might successfully pursue, a young woman might pursue with equal success. Mathematics and the sciences based upon mathematical foundations are to be found in women's colleges. Is there no indication that a distinct line of differentiation should run between the two courses of study for each? Has nature endowed both man and woman with equal gifts of heart and mind and with equal richness of gifts? Has nature blazed a path which each should follow in coming into the possession of his or her powers? If there be a natural line of division, then we fly in the face of nature if we give the same course of study to both. If nature has given us a clew and has indicated the desirability of a different kind of training for woman, then do we not unsex her when we attempt to force upon her the same education which fits a man for the struggle of life? Shall we attempt to make her a mannish woman? The best training for a young woman, it has been found, is not the old rigid college course which has been found unfit for young men and which has been discarded for the elective system. Most college men look forward to getting professional training as few women do. Women take up higher education because they like it; men, because their careers depend upon it. To the man the studies are more objective and prepare him directly to face the world as it is.

Let us keep clearly in mind in examining this question that there is a womanly type of woman. There are ladylike men; there are masculine women. Each variety is a differentiation from type. We must hold clearly in mind the type of woman we are to educate. We must establish an ideal which we are to attempt to realize. This ideal must be established in the light of future usefulness. It must be made with an entire life's work in view. It must be made for a sex, or at least for that part of the sex mentally equipped for higher education, and not for the choice few who are unusually gifted. It must be made, not for the future authoress, nor musician, nor painter, nor teacher, nor manager of a business concern. Higher education will enable all these classes to realize them-

selves and to develop and control their mental resources, but the woman we have in mind is none of these. That is, she is not primarily one of these, but she is a woman with even greater potentialities, with even richer opportunities of blessing the race and of making the circle of her life radiant with helpful and benign influences—she is a wife and a mother. Of the highest importance is the ideal of cultivated and consecrated wifehood. What then should be the line of education to be followed in the secondary schools and colleges in educating a prospective wife and mother primarily, and incidentally a teacher, a business woman, an artist?

Grant Allen, in an article published in the *Popular science monthly* of December, 1889, declares that there ought to be a woman question and movement, but it must accept the fact that most adult women will be wives and mothers. In any ideal community the largest possible number of women must be devoted to maternity, and marriage and support by men must be assumed. Female celibacy must not be the goal for the woman. The accidental and exceptional should not replace the formal and usual. It is not so much the unmarried minority that need attention as the mothers. Le Bon, in the *Revue scientifique,* pleaded that the education we now give to girls is ill-adapted to fit brains otherwise constructed; that it perverts womanly instincts, falsifies the spirit and judgment, enfeebles the constitution, and generally disequilibrates them. Too much information, largely useless, is given, with the result that there is an unfitting for domesticity or for the gaining of a livelihood. Dr. Playfair, in the *British medical journal,* says that the prime and alarming fault in the heads of high schools and colleges for girls is that they, consciously or unconsciously, assume the absolutely untenable theory that the sexual question is of secondary importance, and that there is little real distinction between girls and boys from fourteen to twenty.

Let us notice the physical differences between man and woman. Women are shorter and lighter in weight. The adult height, as compared with man's, is about as 16 to 17, and her weight is as 9 to 10. Her trunk is relatively slightly longer, the lung capacity, relatively less; the blood has fewer

red corpuscles; her bones, a little less specific gravity. She is more anæmic, and her pulse is faster. She is more liable to certain diseases, such as scarlet fever and diphtheria, but resists diseases better and succumbs less readily at nearly every age. Woman's skull is smaller, especially at the base, but larger in circumference at the crown. Her absolute brain weight to that of man is about as 9 to 10, but her smaller size makes her brain about equal, if not heavier, in weight proportionately. The lower centers are larger in women, and in nearly all these respects women differ less among themselves than do men. The average brain weight is five ounces less. The gray matter, or cortex, of the female brain is shallower than that of the male and receives less than a proportional supply of blood. The specific gravity of the gray material of the brain is less in woman, but in the white matter there is no difference. The sexes have the same brain convolutions, but of different sizes, and the same powers, but in differing degrees. The general physique is less robust than that of man.

Glancing now at some of the mental differences, we note the following: Men are superior in strength, rapidity, and in rate of fatigue, but women are superior in new motor combinations. Woman excels in memory; her thought is more concrete and individual; she is more prone to associations in space, as man is in time. Men are more prone to bring things under general rules and with regard to symmetry. Her logical thought is slower in movement, but her associations are quicker than those of man, and she is less troubled by inconsistencies. An examination of the patents recorded in Washington up to October, 1892, shows that of 483,517 patents only 3458 were by women. This would seem to indicate that woman has less patience with the analysis involved in science and invention. In education, men have made most of the reforms. Recent developments show that man can excel woman even in dressmaking and cooking. We note also a comparative absence of originality, more especially in the higher levels of intellectual work. In her powers of acquisition she stands nearer to man than in her powers of creative thought. Yet girls are more acquisitive than boys of the same age, but, as soon as their

brains reach the stage of full development, there is greater power on the part of the male. A woman's information is less wide and deep and thoro. In no department of creative thought can woman be said to have at all approached man, save in fiction. These differences might be charged to the disabilities under which women have labored regarding education and social opinion, but this explanation is not sufficient to account for the dearth among them of products of creative genius. In passing judgment, woman is more apt to be influenced by emotion. Her more sensitive conscience enables her to accept her studies without question, and her pride and self-respect prompt her to overwork. She is a loser in the intellectual race in acquisition, in origination and judgment, but she is a gainer as well: to her credit stand superior refinement of the senses, rapidity of perception, a more retentive memory, rapidity of thought, and an almost intuitive insight. She has a nimbleness of mother-wit, which displays itself in tact, in repartee, or in the general alacrity of her vivacious mind. She does not hold her emotional life so completely in check as does man, but she is easily man's superior in all those noble and redeeming qualities which St. Paul denominates the fruits of the spirit.

Let us consider some of the subjects which young women are called upon to pursue in secondary schools and colleges. One of the subjects which give the greatest trouble is that of mathematics. It may be stated that since algebra is more or less of a formal study, the difficulties the girl experiences in pursuing this subject are not numerous, provided the problem work is reduced to a minimum. The average girl is able, without unusual devotion to the subject, to do acceptable work. Little or no creative genius is demanded; type forms are learned, and in many instances the only ingenuity required is the recognition of the type in the individual example or problem. Here then we see a wide scope for the exercise of memory, one of woman's most dependable mental qualities. When we turn to the subject of geometry, however, we find a different condition of affairs. The ordinary girl in taking up the subject tries to learn it as she has learned her history

or her Latin, by committing the demonstration to memory, but she soon discovers that her teacher has spoiled the plans by reversing the position of the figures or by changing the letters for numerals. She is at once at sea. She is called upon to reason absolutely, while her natural preference is for the concrete and individual. Moreover, she is called upon to offer original demonstrations, when she finds it well-nigh impossible to offer the demonstrations of the book. Her powers of origination are too often insufficient for the task. If she masters her geometry, it is because she varies considerably from the type, or because she devotes to the subject a disproportionate amount of time. With the acquisition there is likely also to be considerable nervous wear and tear due to the worry arising from the consciousness that she is attempting to do something for which she is not adapted, and in which she will not possibly succeed. She has found that her memory and her intuition, her love for the individual and the concrete, stand her in no stead in pursuing a subject which calls for the exercise of pure reason and inventive genius.

The subject of physics would seem also to fall under the ban for the same reason. As at present taught in our high schools and colleges, the great burden of emphasis is placed upon the mathematics of the subject. There is the same aversion in the female mind to applied mathematics as to abstract mathematics, and consequently whatever gain is made in this field results in tremendous nerve expenditure. In the inductive sciences, consequently, women seldom take the lead. These are subjects in which there is no pleasure, and consequently only limited profit.

Probably the fault is not with the subject of physics, but with the method. Too much quantitative work is demanded of both boys and girls; too little attention is given to descriptive physics; little or no attention is given to the great names who have developed the subject and made inventions household words. In obtaining quantitative work, exactness must be demanded, but exactness is a quality that comes relatively late in youthful minds as in that of the race. We are attempting to force nature; we are anticipating maturity of

mind when we crowd into a curriculum subjects in advance of the time when the mind of the average boy or girl is able satisfactorily to pursue these subjects. If the subject of physics under present conditions is taken to the end, hungry curiosity is displaced by satiety and fatigue. The college professor has been too largely in evidence in the construction of the high school course. So far as he is concerned, it is time to cry, *Le roi est mort.*

A few statistics bearing upon the subject of the teaching of mathematics in woman's colleges will be of interest. Out of 639 upper classmen at Vassar, but 82 elected mathematics. In Barnard, 24 per cent. chose mathematics. At Smith College 15 per cent. to 20 per cent. of the students are conditioned in the subject. From other colleges I was unable to secure the desired information. It is not an unknown thing tho, so I am told. in some woman's colleges to place before students examination questions which are very difficult and then admit to college or pass to an advanced grade those whose ratings approach the vanishing point. Here is an evident attempt to create an impression in extra-college circles of a high standard of requirement in scholarship. I am decidedly of the opinion that, so far as secondary school work is concerned, geometry should be optional for girls, and that the method in physics should be radically changed with the emphasis placed upon the descriptive portions of the work and the history of the subject.

What, then, should be the course of study for girls in secondary schools and colleges? The dominant aim in both matter and method should be the cultivation of health. Healthfulness and holiness are synonymous and etymologically related. The health of woman is of even greater importance for the welfare of the race than that of man. The influence of body upon mind is, in a sense, greater in woman, so that the needs of the body should be supreme. Mathematics should be taught only in its rudiments, and only those with special talents or tastes should attempt the study of the higher mathematics, or even of plane geometry. Chemistry should have a subordinate place in the curriculum. The organic chemistry involved in ordinary cooking is too complex to be under-

stood profoundly, but the rudiments of household chemistry should be included. The elementary stages of physics, with special reference to the descriptive features of the subject, and the history of the subject, should be in the list of subjects taught. Physical geography, geology, and astronomy, considered as opportunities for teaching general principles, and not as a means of impressing technical and unusual aspects of the subject, but rather as familiarizing the pupil with the untechnical aspects, should also be included. Of all the sciences, botany should present the most difficult work. The Latin nomenclature and technic of microscopic examination should come late in the course, and common names should be used, in preference to the Latin terminology. Zoölogy, objectively illustrated, should be cultivated and emphasis placed upon environment. The study of morphology and of structure should be less strongly emphasized. For advanced students, sociology, affording as it does its glimpse into the growth and progress of society, and political economy, with its valuable outlook upon industrial life, should find their places. Art in all its forms, appealing so strongly to the æsthetic in woman's nature, must not be overlooked.

Women excel in language and in literature. Perhaps it is too early to decide whether the modern languages are as well adapted for purposes of mental development as are the ancient languages, and perhaps we cannot take the same ground as those extremists who plead for the utter exclusion of Greek, Latin, and Hebrew, because in their judgment a smattering of knowledge is obtained at the high price of ignorance of other and more valuable things. But the opportunities for the study of modern lauguages should be abundantly afforded, and the conversational methods in these subjects should be generally adopted. Nor can we overlook the necessity for a general course in pedagogy, in child study, and in nursing, since these aim to develop power of body and of soul—power which will be reproduced in the home influence upon coming generations. The course in English should be comprehensive and exhaustive. Specialization in all these subjects should come at the end of the course. Specialization has its place, but man is better adapted to it

than is woman. If there is special capacity for particular work, if there is the natural endowment for a particular calling, this work should be left to the university, rather than to the college. The humanities are the particular branches which may well be emphasized in making a curriculum for women based upon their special needs. We may never, except at risk of violence, short-circuit nature, but we may wisely accelerate nature's way. We may consider the adaptability of woman to the course of study wisely only when we have studied her fitness to do advanced work.

After I had gone over the subject-matter of this address in my own mind and determined upon my line of argument, it was a matter of congratulation to find that the distinguished President of Leland Stanford University, in an article in the *Popular science monthly* of December, 1902, in discussing higher education for young women, declared that the opportunity should be afforded them, but that the ideal is not the same as for young men, and that the same course of studies was not to be pursued. To his mind, the essence of the new education for women is constructive individualism.

It is of interest to consider for a moment the results of higher education upon women. The first statistics date from 1882 and include 705 graduates of twelve colleges: 44 per cent. said that they did not worry over their studies; 60 per cent. reported having had some disorder during their college course, and those who studied hard had bad health. Dr. John Dewey, in an investigation which he conducted among 290 college girls, reported 78.1 per cent. as in good health on entering college, 74.9 per cent. during college life, 77.9 per cent. after graduation; 19.6 per cent. reported deterioration of health during college. Dr. Dewey concluded that one-third more break down from mental strain in female colleges than in coeducational institutions. Dr. G. A. Preston, of Boston, found a more encouraging condition of affairs. Of more than 200 college girls examined, it was found that only 2.75 per cent. dropped out from ill health, and as against 2.85 per cent. of college boys from Amherst. It must be borne in mind that the American girls enter college three and one-half years younger than do

the English girls. In the United States, according to Miss Alice Hayes, more improve than deteriorate during college life, while the reverse seems true in England. According to Dr. G. Stanley Hall, the returns from the questionnaires upon which these statistics are based are not so valuable as the medical doctors' tests and opinions. Dr. Hall reluctantly concludes that it is not yet proven that the higher education of woman is not yet injurious to her health. He questions whether woman is not overdrawing her power, her activity of mind and body, and other augmentations of her individuality, at the expense of energy meant for the home and for posterity.

It would be too sweeping an assertion to state that women's colleges are institutions for the promotion of celibacy, and yet an examination of the percentage of marriages among college-bred women would lend color to the statement. Dr. Dewey found that 23 per cent. of the graduates of women's colleges marry, 21 per cent. go into the professions; 28 per cent. of coeducation girls marry, and 12 per cent. go into the professions. He makes 26 per cent. of the graduates of twelve American colleges marry at an average age of 27 years. The marriages took place six years after graduation. He found 74 per cent. single. Miss Shinn concludes, after an examination of 1905 cases, that only 28 per cent. were married. The rate of marriage for the country at large for women more than twenty years old is nearly 80 per cent. She concludes that, under 25 college women rarely marry and but a small proportion of them have married. To quote her exact language: "The ultimate probability of a college woman's marriage, therefore, seems to be below 55 per cent., as against 90 per cent. for other women." Another investigator, Miss Abbott, showed that of 8956 graduates of sixteen colleges, 23 per cent. were married. It would appear that the rate of marriage of college women is decreasing, and that the age at which marriage occurs is becoming steadily later.

Considering next the results of the higher education upon motherhood, the case appears even worse yet for educated women. Birth rates are the indication of national growth or decay; only the constant immigration of foreigners prevents

us from occupying the position in which France finds herself at this time, that of facing the problem of a steady decadence of birth rates. In the New England family, probably the best type of American civilization, where, for two centuries, the homes were almost perfect models, the birth rate has steadily declined for half a century at a very rapid rate, until now it is actually lower than that of any European nation, France itself not excepted. Comparing the forty years ending with 1890, native marriages average 2.3 children each, while those of the foreign-born average 7.4 each. Among the causes for this condition of affairs may be stated physical and mental inability to rear children; but a stronger reason appears to be in the unwillingness to sacrifice ease, freedom, and enjoyment for the responsibilities of parenthood. A disposition to displace duty with pleasure, the effeminacy of wealth, and possibly the new woman movement, must also be included. It is evident that if our race depended upon the rate of replenishment of the educated classes, it would be doomed to speedy extinction. Are we ready to accept the idea that further human evolution requires a decline in parenthood? Physiologists tell us that high nerve development increases the completeness, the intensity, and the fullness of individual life, but weakens the power of its transmission. Evolution provides for the individual evolution of woman by making constantly increasing demands upon her for the performance of those functions which are purely physical. Any college that depended on the children of its graduates for fresh students would be doomed to extinction. Leaders are continually recruited from the class below. Time was when marriage and children were felt to be religious duties. That day seems to be disappearing. Perhaps it may be necessary to resort to legislation and to tax bachelors into marriage. An examination of the question thus far inclines one to the view that if higher education became universal, posterity would be gradually eliminated, and the schools and teachers would progressively exterminate the race.

In order that this condition of affairs may not continue to exist, it would seem to be necessary that a right ideal for wom-

anhood be established and realized. In this work the woman's college must do its part. Girls should not be trained primarily to independence and self-support. They must not be imbued with the idea that matrimony and motherhood, if they come, will take care of themselves. Some educators among women tell us that the best way to prepare a girl for life is not to give her a general education which will fit her for a common destiny, but a special training for some particular calling. It would seem wiser to consider the question of the future individual life of woman as one of social necessities and ideals, as well as of inborn psychological characteristics of self. There is actual danger of the possibility of higher education for women becoming a fad. If the woman's colleges are established chiefly to devote their energies to the training of those who do not marry, or if they are to educate for celibacy, their point of view is entirely correct. If their ideal is that of the maiden aunt, or school-teacher, or bachelor woman, they certainly are realizing their ideal. But they are withdrawing from the function of heredity the best women of the age, who are leaving no posterity behind them. Modern ideas and modern training are affecting the matter for the weal or the woe of the human race, and many whom nature designed for model mothers are apparently unfitting themselves for maternity in the pursuit of higher education. Is not this a question in the determination of which altruism should find expression?

In conclusion, let me appeal more especially to woman to aid in reconstructing a sane and wholesome ideal for woman. Let me urge her to exercise her wide influence in the making of a proper course of study for the high school girl and the college girl. Let her enlist in the new cause of working out the new humanistic or liberal education which the old college claimed to stand for and which now needs complete reconstruction to meet the demand of modern life. Let her strive to restore the humanistic elements of history and biography, of science, the most popular features at their best, and the application in all to the more non-technical fields. Let her see to it that the moral, religious, and poetic aspects of nature are not sacrificed to utilities, that materialism and commercialism do

not obliterate high ideals. Let her be true to her nature and take her stand against all early specialization of work. The time has come to restore the humanistic college to its proper sphere, and educated woman should come forward and contribute her assistance. She should do so and she should render aid from her experience in evolving a high school and a college course that is genuinely liberal. Such a course will not only fit the nature of her sex far better than do present maladjustments, but she will be aiding at the same time young men at the critical period of their own education. In doing this, she will in some measure repay her debt to man, who, grudgingly perhaps, has extended to her the benefits of higher education. She will aid him in making the college do college work, so that it will not be a faint adumbration of the university. The work in high schools and academies—the colleges of the people—is in peril, and she can aid in the rescue. If we have made a mistake in the past in placing the emphasis upon mental superiority, let us change our notion and give to the development in altruism a superior place. Perhaps our democracy has been of too strenuous a variety in insisting upon equal rights for all in the realm of intellect, as well as of politics. Woman has been caught in the maelstrom, and there has been danger of her destruction, and with her the great ideals which have stimulated her in the past. No exception to the general laws of evolution has been made in favor of woman, and she will come into her estate only when she recognizes the nature of her high ideal and then strives zealously to realize it.

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V

THE ENGLISH PREPARATORY SCHOOLS [1]

"Of the foreign and American visitors who come in increasing numbers to study English education, it is probable," says so competent an authority as Professor Michael Sadler, "that comparatively few have even heard of the existence of what we call Preparatory Schools." If this is true of the Americans who go to England to study English education, it is probably true to a still greater extent of those who stay at home and depend on their private reading for a knowledge of foreign educational systems. In what I am about to say therefore of the English Preparatory Schools, I shall frankly, tho doubtless in individual cases mistakenly, assume on the part of my audience the same ignorance of the character of these schools and their place in English secondary education that I labored under myself until a year ago. My present knowledge of them has been derived mainly from volume 6 of the Special Reports on Educational Subjects presented to the British Parliament under the authority and direction of the English Board of Education in the year 1900.

The English Preparatory Schools are, historically and actually, fitting schools for the great public schools at which gentlemen's sons are educated for the university. They are attended therefore by a select class of boys of from 9 to 14 years of age, whose parents are able and willing to give their sons an expensive education extending over a long series of years. They are strictly preparatory, not finishing schools; no boy attends them who does not expect to continue his school education farther. As, moreover, they are preparatory to the public schools, they are dominated by those schools in their course of

[1] A paper read before the Headmasters' Association of the United States, at New York, N. Y., December 28, 1905.

study. I was about to say absolutely and completely dominated, and that indeed would hardly be too strong an expression; for, as the preparatory schools are private enterprises, dependent for their support on boarding and tuition fees, and as their attractiveness to parents depends largely on the success of the boys they turn out in passing the entrance and scholarship examinations by which the authorities of the public schools test candidates for admission, it is obvious that the requirements of the public schools, as made known thru their entrance and scholarship examinations, cannot fail to exert a controlling influence on the work of the preparatory schools. As a matter of fact, these requirements are carefully studied by the headmasters of preparatory schools and accepted by them as authoritative. We frequently say in this country that the colleges and universities, thru their admission requirements, dominate the secondary schools; and to the extent to which our secondary schools are feeders of the colleges, and therefore especially in the case of the secondary schools that are distinctively fitting schools, this is true. In the same way, and to a greater degree, because of the strenuous competition developed within the last fifteen years, the English preparatory schools are dominated by the public schools to which they send their boys.

The comparison which I have made between the domination of the English preparatory schools by the public schools and the domination of our own secondary schools by the colleges and universities may be carried still further; for, in both cases, it has resulted in the establishment of systematic co-operation between the authorities of the two sets of institutions. In this country, however, the initiative came from below; in England, from above. It was the Massachusetts Classical and High School Teachers' Association that took the first steps which have since resulted in the organization of associations of colleges and secondary schools in different parts of the United States; in England, the first step taken towards co-operation between the heads of public and preparatory schools was taken by the headmasters of the public schools. At the Public School

Headmasters' Conference, held at Oxford in 1890, the headmaster of Harrow offered a resolution to the effect "that it is desirable to make the relation between preparatory and public schools somewhat closer and more systematic." This resolution was received with general approbation; and the executive committee of the conference was requested to invite the preparatory schoolmasters to "consider whether, by some representative organization, they might put themselves in fuller communication with the schools represented at the conference." Up to that time, the headmasters of preparatory schools had looked upon one another as business rivals, rather than as educational co-workers, and the suggestion that they unite for the promotion of a common end came to them as a surprise, if not as a shock; but one of their number, a natural diplomatist we may suppose, proposed a much debated question in cricket as a suitable subject for a first conference—a suggestion which met with general acceptance. The issue of this first conference was so satisfactory that a formal organization, known as "The Association of Headmasters of Preparatory Schools," was established in 1892. Thus the game of cricket established an added claim to grateful recognition for beneficent service in English education. In 1900 this association had reached a membership of more than 280, and had come to be recognized not only by other educational bodies, but by the national government, as the official organ of opinion and the official channel of communication on all subjects relating to the class of schools which it represented. Many meetings have been held between authorized representatives of the Public School Headmasters' Conference and the Association of Headmasters of Preparatory Schools for the discussion of important questions bearing on their interrelated work.

At this point, some statistical information about the class of schools under consideration will be of interest. It has been estimated that there are in Great Britain at the present time somewhat more than four hundred preparatory schools of the strict type, and that fully ten thousand boys "from the highest social stratum in the country" are in attendance at them. The

headmasters of these schools, with rare exceptions, are graduates of Oxford or Cambridge, and one-sixth of them are clergymen. Most of them have been graduated from the university in honors, and not a few of them in high honors. Most of them were fitted for the university in the public schools and many of them have been public school masters. The majority, too, of the assistant masters are graduates of Oxford or Cambridge, and most of these also have taken honors. The typical, prosperous preparatory school is a boarding school in the country, accommodating about fifty boys. The resident teaching staff of such a school consists of the headmaster and four assistant masters. Of these assistant masters, the senior, who has possibly been fifteen or twenty years in service at the school, receives a salary of about £200 a year, besides board and lodging; the junior, fresh from the university, about £120, and the other two about £150 each. The average number of boys to a resident master is only eight; but the work of the resident masters includes, besides instruction in regular subjects of the course of study, general oversight of the boys and supervision of their organized compulsory games. The average age of the boys in attendance at the preparatory schools is 9½ years at entrance and 13½ years at leaving; but the limits generally accepted as ideal seem to be 9 and 14 respectively.

American teachers, in considering the foregoing statistical statements, will probably be especially impressed by the facts that the teachers of these boys of 9 to 14 years of age are men and university graduates; that the classes in which they are grouped are very small; that games are organized and compulsory; and that the distribution of the entire day, including not merely the hours given to study and recitation, but the hours given to sleep, to meals, to the preparation of lessons, and to recreation are under the control of the school authorities. If these general features of organization, moreover, especially impress American teachers, the specific features of the course of study and the time-table, to which I will next proceed, will probably seem still more significant.

I have already said that the English preparatory schools

are dominated by the public schools for which they prepare their boys, and that this domination is exercised thru the entrance and scholarship examinations set by the public school authorities. To win a scholarship at a public school or to gain fairly advanced standing there, a boy must show by examination that he has reached a high standard of proficiency in classics and mathematics, for, practically, new boys are placed, that is, assigned to forms, on these two subjects alone. Some knowledge of the Scriptures, of geography, of history, of French, and of English grammar and composition is assumed; but, so far as marks and classification are concerned, such knowledge goes practically unrecognized. As would naturally be expected, the preference thus accorded by the public school authorities to the classics and mathematics is reflected in the time-tables of the preparatory schools. One school, for example, which makes a specialty of competing for scholarships, reports sixteen full hours a week, exclusive of time spent in preparation, as given by boys 13 years of age to the classics.

For detailed transcripts of individual time-tables, I must refer those interested to the volume of parliamentary reports already mentioned. It will be sufficient for my present purpose to give some general averages, which, while not precisely applicable to any individual school, represent fairly the prevailing usage, and to supplement these general averages by giving the actual time-table of a typical preparatory school. Accordingly, the average amount of time given in the preparatory schools by boys of from 9 to 10 years of age, exclusive of the time given to the preparation of lessons, is: to Latin, 5 hrs. 49 min. a week; mathematics, 5 hrs. 23 min.; French, 2 hrs. 49 min.; English, including language, literature, grammar, and composition, 2 hrs. 49 min.; writing or dictation, 2 hrs. 25 min.; Scripture lessons, 2 hrs. 12 min.; history, 1 hr. 57 min.; geography, 1 hr. 41 min.; drawing, 1 hr. 31 min.; elementary science, 57 min. The average amount of time, exclusive of the time spent in preparation, given by boys 13 years of age to these subjects, is: classics, 12 hrs. 23 min., divided between Latin, 7 hrs. 49 min., and Greek, 4 hrs. 34 min.; mathematics,

5 hrs. 38 min.; French, 3 hrs. 8 min.; Scripture lessons, 2 hrs. 3 min.; history, 1 hr. 50 min.; drawing, 1 hr. 39 min.; geography, 1 hr. 17 min.; English, including language, literature, grammar, and composition, 1 hr. 10 min.; writing or dictation, 53 min.; elementary science, 53 min. In some schools German is alternative with Greek; but in 59 per cent. of the schools reported, German is not taught at all. The average amount of time given to German in the schools in which it is taught is 3 hrs. 41 min. a week; and in such schools, as the time required for German is less than the time required for Greek, the time gained is added to mathematics and French. The average total amount of time, including time spent in preparation, given to the foregoing subjects, is: for boys of from 9 to 10 years of age, 30 hrs. a week; for boys 13 years of age, 35 hrs. Latin is begun at the age of 9 years; Greek is sometimes not begun before the age of 12, usually at the age of 11, sometimes still earlier; Euclid, by which is meant demonstrational as distinguished from objective geometry, and algebra are begun at the age of 11.

No one school, it is to be noted, teaches all the foregoing subjects. For example, 3.7 per cent. of the schools reported teach no geography, and 6.2 per cent. do not teach it in the top form, that is, in the class of 13-year-old boys; 72.5 per cent. of the schools reported teach no elementary science whatever, and 87.7 per cent. do not teach it in the top form; 38.7 per cent. of the schools reported do not teach writing or dictation in the top form; in 34.2 per cent. of the schools reported, drawing is an optional subject. The averages here quoted, then, are averages made up from the totals actually returned for each subject by the 120 schools reported.

The foregoing statement, as already indicated, gives averages calculated from the returns received from 120 preparatory schools. The following time-table, which shows the number of hours given to each subject per week inclusive of the time spent in preparation, is the actual time-table of a fairly representative preparatory school for the summer term of the year 1899:

TIME-TABLE OF A PREPARATORY SCHOOL, 1899

FORM OR CLASS		I.	II.	III.	IV.	V.
Average Age		9 yrs. 8 mos.	11 yrs.	11 yrs. 2 mos.	12 yrs. 6 mos.	12 yrs. 7 mos.
Classics	Latin	8¾	12¼	9½	10½	11
	Greek (or German)			5	5	6½
Math.	Arithmetic	6	5	4	3¼	2½
	Algebra				2	2
	Geometry		2	3	2	2
French		4	4	4	4	4
English	Gram., Lang., Lit.	6¼	4	1	½	¾
	Writing and Dictation	1½	1	1	½	¼
Religious knowledge		1½	1½	1½	1½	1½
History	English	1½	2	1½	1½	1½
	Greek or Roman			1	1	1
Geography		1½	1	1	1	1
Drawing		1	(In these classes optional)			
Headmaster's weekly review		¾	½	¾	½	
Total number of hours a week		32¾	33¼	33¼	33¼	34

Supplementary Subjects

Singing (two divisions) ..... 1 hr. a week
Drilling and Gymnastics (two divisions) ..... 1½ hrs. a week

Optional Subjects

Drawing (two divisions) ..... 1½ hrs. ..... 2 hrs. a week
Instrumental Music (including practice) ..... 3 " " "
Carpentering ..... 1 " " "
Fencing or Boxing ..... 1 " " "

The time-tables which I have thus summarized show the number of hours given to each subject included in the regular course of study of the schools under consideration, and reveal clearly the supreme importance attached, under the ideal embodied in the requirements of the public schools, to the classics and mathematics; but they do not necessarily indicate the standard of attainment aimed at in those subjects. For information on this point we must consult the entrance requirements of the public schools, and especially we must learn how these requirements are to be interpreted. In other words, we must consult the examinations set for admission to the public schools. Moreover, as the entrance scholarship examination differs from the ordinary entrance examination in degree only, and not in kind, and as it is the scholarship examination thru which the public school determines the content and scope of the course of study for clever and average preparatory school boys alike, we may safely found our estimate of what the English

preparatory school aims to do for boys of 14 on the scholarship examination papers by which the clever boys are tested when they appear as applicants for admission to the public schools. As a precaution against too high an estimate, we may note in advance that only about 8 per cent. of the candidates for admission of a given year reach a sufficiently high standard in the examination to secure election to a scholarship.[2]

Altho the papers set in other departments would also be significant and instructive, I have, in the interest of brevity, limited myself in selecting specimen entrance scholarship examinations to the two subjects which I have spoken of as rated first in importance in the preparatory school program; namely, classics and mathematics. Moreover, as the Eton scholarship examination papers, as printed in the parliamentary report already referred to, afford fuller information than the others as to the conditions under which the examinations were taken, giving the age of the candidates and the time allowed for the writing of the answer papers, I shall select the examinations offered as specimens from the Eton collection exclusively. But, in view of this limitation of the field of selection, I may add that the mathematical paper offered from the Eton collection is somewhat more elementary than certain others included in the parliamentary report. The latter, being set for boys who had specialized in mathematics instead of classics, cover trigonemtry and advanced algebra. By way of introduction to the subjoined Eton entrance scholarship papers, a few words of statistical information about the scholarships to which they lead will be of interest.

The ordinary annual fees for a boy at Eton amount to £136 10*s.*; but the fees for a scholar, as the winner of a scholarship is called, are only £20 10*s.* The annual value of a scholarship, therefore, is £116. The scholarships are derived from endowments, and the object for which they are maintained is to attract clever boys to the school. The examination of the

[2] In the course of the discussion of this paper, Mr. John H. Denbigh, a gentleman familiar with English conditions, said that the small proportion of candidates elected to scholarships was due to the limited number of scholarships to be awarded, not to the defective preparation of the candidates.

candidates is conducted mainly by outside examiners. There are seventy of these scholarships in all, and the seventy boys who hold them, called "scholars" in distinction from the "commoners," live by themselves in a separate house called the "College." It may be interesting to note, in passing, that these seventy picked boys are not inferior to their associates in athletic prowess.

The following papers were set for boys under 14 years of age at the Eton scholarship election of July, 1899. The time allowed for each paper was two hours. The passages set for translation were unseen passages, and were unaccompanied by notes or vocabularies.

I. *For Latin Prose Composition*

"I have long since avowed my belief that, in accordance with God's purpose, each nation of the earth possesses a peculiar character adapted to the duties assigned to each in the great scheme of human affairs.

Thus to France was appointed by the Supreme Ruler of mankind the duty of civilizing the European world. To England it has been given to guide all other states to commercial wealth, to excellence in the useful arts of life, and to political liberty. But to Germany was delegated the highest and noblest trust. For in Germany we revere the mother of nations, the reformer of corrupted religion, the preserver of the liberties and independence of the republic of nations. Weakened as she has been for aggressive war by the division of her territory into so many states, yet in that very weakness she has found her strength in the beneficent career she was destined to pursue. Our age has seen her assumption of her proper place in the republic of letters, and we ourselves are witnesses how, in this new sphere of distinction, she has exhibited the same strength which more than a thousand years ago enabled her to lay in this island the basis of government, of which, if we are true to ourselves, a thousand years will scarcely see the overthrow."

II. *Latin Translation*

1. [A narrative passage from Tacitus, of which the subject is]: "The poisoned prince calls on his friends to avenge his death.

"Caesar paulisper ad spem erectus, dein fesso corpore, ubi finis aderat, adsistentes amicos in hunc modum adloquitur: 'Si fato concederem, iustus mihi dolor etiam adversus deos esset, quod me parentibus liberis patriae praematuro exitu raperent. Nunc scelere Plancinae interceptus ultimas preces pectoribus vestrîs relinqûo: Si quos spes meae, si quos propinquus sanguis, etiam quos invidia erga viventem movebat, inlacrimabunt quondam florentem et tot bellorum superstitem muliebri fraude cecidisse. Erit vobis locus querendi apud senatum, invocandi leges. Non hoc praecipuum amicorum munus est, prosequi mortuum ignavo questu, sed quae voluerit meminisse, quae mandaverit exsequi. Flebunt Germanicum etiam ignoti:

vindicabitis vos, si me potius quam fortunam meam fovebitis.' Iuravere amici, dextram morientis contingentes, spiritum ante quam ultionem amissuros."

2. [A passage from one of Terence's plays, the subject of which is:] "Simo begs Chremes to let the wedding take place.

"*Si.* Ausculta paucis. *Ch.* Ausculto; loquere quid velis.

Si. Per te deos oro et nostram amicitiam, Chremes,
quae incepta a parvis cum aetate adcrevit simul,
perque unicam gnatam tuam et gnatum meum,
cuius tibi potestas summa servandi datur,
ut me adiuves in hac re, atque ita uti nuptiae
fuerant futurae, fiant. *Ch.* A, ne me obsecra:
quasi hoc te orando a me impetrare oporteat.
Alium esse censes nunc me atque olim cum dabam?
Si in rem est utrique ut fiant, arcessi iube.
Sed si ex ea re plus mali est quam commodi
utrique, id oro te in commune ut consulas,
quasi illa tua sit Pamphilique ego sim pater."

III. *Latin and Greek Grammar*

1. "Give the abl. sing. and acc. pl. of sal, amans (subst. and part.) auceps, aries, domus; and the gen. sing. and acc. pl. of *ἀστήρ, ἰμάς, βοῦς, ἄνθος, Σοφοκλῆς.*

2. Give the perfect and sup. of torreo, neglego, meto, fingo; the imperf. indic. act. of *ἕρπω, ἀναιρῶ, ὠνοῦμαι, καθέζομαι*; and the aor. act of *ἀναλίσκω, κλαίω, πίμπλημι, χέω.*

3. Parse eluxi, ausim, aquai, fare; *ἐάγη, ἐλᾷ, ὄτῳ, κεκμηότα.*

4. Show by examples the constructions the following words admit of: suadeo, minor, piget, dubito; *κατακρίνω, ἀμύνω* (act. and mid.), *μεταδίδωμι.*

5. Distinguish between the use of nequis—ut nemo, tum—deinde, quivis—aliquis; *ὅτε—ἐπειδή, ἕως* with aor. and imperf., *μετά* with gen., dat., and acc.

6. Parse and explain the formation of: *θᾶσσον, μεσαίτερος, εἶλκον, σχές*; discuss the spelling of sylva, vulgus, sepulchrum; and give the meaning of HS. SPQR. CCIↃↃ. SPD.

7. Explain the term 'Middle Voice': with what meanings is it used in Greek? What traces do you observe in Latin?

8. Put into Latin and Greek:

i. At my house, in our time, on this condition.

ii. Had I happened to be present, I should not have done so.

iii. I came to tell you I was ready, so that you might know what to do.

iv. He said he would not go himself before Caesar returned."

IV. *Greek Translation*

1. [A narrative passage in Attic prose from Plato's *Republic*, the subject of which is:] "The secret of happiness in old age.

Εὖ οἶν μοι καὶ τότε ἔδοξεν ἐκεῖνος εἰπεῖν, καὶ νῦν οὐχ ἧττον. παντάπασι γὰρ τῶν γε τοιούτων ἐν τῷ γήρᾳ πολλὴ εἰρήνη γίγνεται καὶ ἐλευθερία, ἐπειδὰν αἱ ἐπιθυμίαι παύσωνται κατατείνουσαι καὶ χαλάσωσι. καὶ ἐγὼ ἀγασθεὶς αὐτοῦ εἰπόντος ταῦτα βουλόμενος ἔτι λέγειν αὐτὸν ἐκίνουν καὶ εἶπον, Ὦ Κέφαλε, οἶμαί σου τοὺς πολλοὺς, ὅταν ταῦτα λέγῃς, οὐκ ἀποδέχεσθαι, ἀλλ' ἡγεῖσθαί σε ῥᾳδίως τὸ γῆρας φέρειν οὐ διὰ τὸν τρόπον ἀλλὰ διὰ τὸ πολλὴν οὐσίαν κεκτῆσθαι· τοῖς γὰρ πλουσίοις πολλὰ παραμίθια φασιν εἶναι. Ἀληθῆ, ἔφη, λέγεις. οὐ γὰρ ἀποδέχονται. καὶ λέγουσι μέν τι, οὐ μέντοι γε ὅσον οἴονται, ἀλλὰ τὸ τοῦ Θεμιστοκλέους εὖ ἔχει, ὃς τῷ Σεριφίῳ λοιδορουμένῳ καὶ λέγοντι, ὅτι οὐ δι' αὐτὸν ἀλλὰ διὰ τὴν πόλιν εὐδοκιμοῖ, ἀπεκρίνατο ὅτι οὔτ' ἂν αὐτὸς Σερίφιος ὢν ὀνομαστὸς ἐγένετο οὔτ' ἐκεῖνος Ἀθηναῖος. καί τοῖς δὴ μὴ πλουσίοις χαλεπῶς δὲ τὸ γῆρας φέρουσιν εὖ ἔχει ὁ αὐτὸς λόγος, ὅτι οὔτ' ἂν ὁ ἐπιεικὴς πάνυ τι ῥᾳδίως γῆρας μετὰ πενίας ἐνέγκοι οὔθ' ὁ μὴ ἐπιεικὴς πλουτήσας εὐκολός ποτ' ἂν ἑαυτῷ γένοιτο.

2. [A passage of verse in the elegiac stanza from Theognis, the subject of which is :] " ' In eternal lines to time thou growest.'

Ἀκρόπολις καὶ πίργος ἐὼν κενεόφρονι δήμῳ,
Κύρν', ὀλίγης τιμῆς ἐμμορεν ἐσθλὸς ἀνήρ.
σοὶ μὲν ἐγὼ πτέρ' ἔδωκα σὺν οἷς ἐπ' ἀπείρονα πόντον
πωτήσῃ κατὰ γῆν πᾶσαν ἀειρόμενος
ῥηιδίως· θοίναις δὲ καὶ εἰλαπίνῃσι παρέσσῃ
ἐν πάσαις πολλῶν κείμενος ἐν στόμασι.
καί σε σὺν αὐλίσκοισι λιγυφθόγγοις νέοι ἄνδρες
εὐκόσμως ἐρατοὶ καλά τε καὶ λιγέα
ᾄσονται· καὶ ὅταν δνοφέροις ὑπὸ κεύθμασι γαίης
βῇς πολυκωκύτους εἰς Ἀίδαο δόμους,
οὐδέ ποτ' οὐδὲ θανὼν ἀπολεῖς κλέος, οὐδέ γε λήσεις
ἀφθιτον ἀνθρώποις αἰὲν ἔχων ὄνομα,
Κύρνε, καθ' Ἑλλάδα γῆν στρωφώμενος ἠδ' ἀνὰ νήσους,
ἰχθυόεντα περῶν πόντον ἐπ' ἀτρύγετον,
οὐχ ἵππων νώτοισιν ἐφήμενος· ἀλλά σε πέμψει
ἀγλαὰ Μουσάων δῶρα ἰοστεφάνων.

V. *For Latin Elegiacs*

1. *The Toilers of the Sea*

No fish astir in our heaving net,
The sky is dark and the night is wet ;
And we must ply the lusty oar,
For the tide is ebbing from the shore,
And sad are they whose faggots burn,
So kindly stored for our return.
Our boat is small and the tempest raves ;
And nought is heard but the lashing waves :
Yet sea and tempest rise in vain,
We'll bless our blazing hearths again.
Push bravely, mates ; our guiding star
Now from the turret streameth far :
Before the midnight hour is past,
We'll quaff our bowl and mock the blast.

For Lyrics

2. *After Sorrow Cometh Joy*

Sweetly gleam the morning flowers
When in tears they waken ;
Earth enjoys refreshing showers,
When the boughs are shaken.
Stars shine forth when night her shroud
Draws as daylight fainteth ;
Only on the tearful cloud
God his rainbow painteth.

VI. *Mathematical Paper*

1. Find the number of acres in a square field whose perimeter is one mile and a half. Also show that the length of its diagonal is between 53 and 54 yards more than half a mile.

2. Find the quotient when

$$(cy-bz)^2+(az-cx)^2+(bx-ay)^2+(ax+by+cz)^2$$

is divided by $x^2+y^2+z^2$.

3. Add together the fractions

$$\frac{a+b}{ab+c^2-ac-bc}, \frac{a}{ac-c^2} \text{ and } \frac{b}{bc-c^2}.$$

4. Solve the equations

$$(1)\ \frac{2}{x+1}=\frac{4}{x-3}-\frac{3}{4}$$

$$(2)\ x^2+y^2+x+y=32\ ;\ xy=12$$

5. A boy who runs to school at the rate of ten miles an hour, is one minute late ; if he had run at the rate of twelve miles an hour, he would have half a minute to spare. How far had he to go and how much time had he to do it ?

6. Solve the equation

$$x^3-ax-12a^2+5x+22a=6.$$

and determine the factors of

$$x^2-xy-12y^2+5x+22y=-6.$$

7. Find the sum of 20 terms of an arithmetical series whose 7th term is 16 and its 13th term 31.

8. If the difference of the roots of the equation

$$x^2-2(a+c)x+b^2=0$$

be equal to the difference of the roots of the equation

$$x^2+2(b+c)x+a^2=0$$

and a be not equal to b, prove that each equation has its two roots equal to one another.

9. If a straight line be divided into any two parts, the squares on the whole line and on one of the parts are equal to twice the rectangle contained by the whole and that part, together with the square on the other part.

10. From a given point O external to a given circle draw a straight line OPQ to cut the circle at two points P and Q, so that OP shall be equal to PQ.

11. The opposite angles of any quadrilateral figure inscribed in a circle are together equal to two right angles.

12. If I be the center of the circle inscribed in the triangle ABC, prove that the centers of the three circles which circumscribe the triangles IBC, ICA and IAB, are on the circumference of the circle circumscribing the triangle ABC.

13. If the vertical angle of a triangle be bisected by a straight line which cuts also the base, the segments will have the same ratio as the other sides of the triangle have to one another.

During the reading of the foregoing examination papers, you have doubtless been mentally comparing the character and scope of the preparation for secondary school work which they imply with the character and scope of the preparation made for the corresponding grade of school work in this country, and you have probably been reflecting, too, on the educational ideals which the papers embody and the lessons, perhaps, that we may profitably draw from them. Whatever opinions you may personally entertain on these points, you will, I am sure, be interested to know what cultivated English schoolmasters themselves think of their own educational procedure.

Mr. G. Gidley Robinson, headmaster of a preparatory school, in a paper on "The preparatory school curriculum," says: "The clever boy climbs rapidly up the school by the classical ladder. An entrance scholarship is waiting to be won, and he has every temptation to drop, one after the other, all subjects which will not pay in the examination; thus his grounding is apt to be narrow, and his interest in everything except the world of books is stunted and impoverished. At thirteen and a half he will show a precocious facility in finding his way through an 'unseen,' or in writing a piece of Latin prose; but (unless he happens to come from an unusually cultivated home) his knowledge of the world in which he lives, indeed of nearly everything out-

side the classics, will be very small. And he will certainly suffer from the special weakness inherent in an exclusively bookish training, viz., want of originality, want of power to look at things with his own eyes instead of thru the eyes of his 'authorities.' He has come to the top, as the clever boy always does, be the curriculum what it may, and he is certainly, in a sense, a success; but what of the great majority, the boys of moderate or less than average ability?"

A representative committee of the Association of Headmasters of Preparatory Schools, in a statement prepared in response to a request addressed to it by a committee of the Public School Headmasters' Conference in 1897, says:

"The difficulty in covering all the necessary ground has its effect . . . upon most masters as well as boys. They not only have a sense of distress caused by the present pressure, but are also led to do a great deal more for their boys than is good for them. In order to save time, they are tempted to feed them with information instead of educating them. And thus, by their very willingness and devotion, they often weaken the spring of the mind, and destroy the power of doing original or unaided work.

"The hardworking boy of fair ability, who perhaps gets a scholarship under the present system, shows the bad effects of his training more clearly than the clever boy. He wins success for the most part by sheer effort of (verbal) memory. The strain of preparation cannot be kept up. The boy's brain revenges itself by lying fallow; and the public school wonders how the examiners could have elected so dull a boy.

"The ordinary dull boy suffers most of all. He has little aptitude for languages. The endless Latin and Greek and French and mathematics are to him intolerably wearisome. Hence he hates schoolwork as drudgery. His curiosity (probably the one link with cultivation that he possesses) is left dormant. There is a divorce between his work and his life. And so, when he reaches the public school, he seems to have learnt very little of anything, and does not know what to do with his leisure. Hence the excessive athleticism we most of us deplore, and the educational failures that are so common."

Professor Michael Sadler, formerly the Director of Special Inquiries and Reports for the Board of Education, in a paper on "The place of the preparatory school for boys in secondary education in England," says:

"The quality of the work done in classics is specially remarkable; and it would be a grievous mistake to think that anything short of the very best teaching in other subjects could effectively take the place of what is now so well done in Latin and Greek. Many experienced and skillful schoolmasters are convinced that exact teaching in the classical languages is an unrivaled discipline for the mind—not in a directly utilitarian sense, but in its indirect effect on the logical powers. Many other people, while not prepared to concede the unique excellence of the older classical training, would cordially agree that, in skillful hands, the teaching is thoro and that, in a certain limited sense, it severely disciplines the mind of the boys. But they feel that it often fails to induce a wide range of intellectual interests. It causes the boys to miss their one opportunity of learning many things far more appropriate than advanced classics to their natural tastes and years."

On the question of Latin Verse composition, Dr. Hely Hutchinson Almond, headmaster of a public school, in a paper on "The preparatory school product from the point of view of a public school master," declares that the making of Latin verses cultivates resource and ingenuity more than anything that a boy does"; and, lest you curtly dismiss his opinion as that of a hide-bound pedant, let me ask you to listen to his ideal of the standard by which the preparatory school product should be judged: "We shall be on the highroad," he says, "to have the 'preparatory school product' more as he ought to be when parents as well as public school authorities come to care more for what he is than for what he knows; for his powers of intelligence and reasoning rather than for a packed portmanteau of information; for health, activity, and high spirits rather than for the strokes he has learned at cricket. Let them estimate the influence of his school life by the openness of the boy's countenance, the frankness of his manner, the courtesy, kindliness, and honesty of his conduct, by the clearness of his com-

plexion and the good development of his chest and arms; by his fertility in resource; by the books and parts of a newspaper which he reads; and by the subjects on which he cares to talk."

On the other hand, Headmaster Robinson, already quoted, says of Latin verse composition: "In the great majority of cases verses are either stolen from a *Gradus*, or pieced together out of the tags that long practice has taught the boy how to use. In other words, they are no test of originality, but only of ingenuity and a well-drilled memory. It must be a common experience of public school masters to find that a boy who has produced a surprisingly good set of verses in his scholarship examination, is quite devoid of the taste, the imaginativeness, which his performance had seemed to imply."

I have said nothing of the physical training or the social life provided for the boys of the English preparatory schools. Interesting and significant as these aspects of education are, and important as is their share in the results achieved in the narrower domain of the specifically intellectual work of the schoolroom, the consideration of them would take me too far afield. I will close this paper with a few brief observations on the more striking contrasts which it suggests between English and American practice in the restricted field which it covers.

It is clear that the so-called public schools, which conspicuously embody the traditional English ideals of secondary education, have, as compared with our American high schools and endowed secondary schools, the immense advantage of resting, for a foundation, on a body of preparatory schools which constitute, in conjunction with them, an organically related, self-consistent, progressive system of education. We may not accept the ideals embodied in that system—indeed, it is at least doubtful whether the great majority of thoughtful Englishmen accept them, and it is certain that a respectable minority of competent English critics distinctly reject them—but that a self-consistent system, whatever its defects of detail may be, is, as such, of priceless value will not be disputed. In England, as in Germany, the boy who is to enjoy the advantages of a prolonged school training begins the appropriate study of sec-

ondary school subjects at the age of nine years, and continues the study of them to the age of nineteen years, under the prescriptions of a well understood and harmoniously administered system of training that has grown with the growth of the nation, that embodies the nation's ideals, and that is identified with the national greatness. This English system insensibly and naturally merges elementary with secondary education five years before the adolescent period begins, and carries the mental development of the boy forward without marked break until the instincts and powers of early manhood open; the prevailing American practice draws a sharp line of demarcation between elementary and secondary education at the age of fourteen and, by delaying the beginnings of secondary education, voluntarily sacrifices, thru misdirected effort, two years of precious time. By postponing the introduction of secondary subjects to the age of fourteen, and confining our children to the dreary round of elementary subjects until the period of adolescence begins, we show a want of faith in the unfolding powers of the mind which no facts drawn from experience can be found to justify. If it could be proved that the mental development of English and German boys is hindered by the early introduction of such subjects as algebra, geometry, Latin and French, and that the mental development of American boys is promoted by the late introduction of them, then the prevailing American practice would stand amply justified. But will any competent observer maintain that this is true? On the contrary, do not reason and experience alike prove that such postponement results in arrested development?

Again, look at the size of the classes in the English preparatory schools and the ratio of teachers to pupils. Compare the prevailing organization of American elementary schools into classes numbering forty to fifty with the prevailing organization of the English preparatory schools into classes numbering eight to ten. We train our boys during the elementary period by companies; they train theirs by squads. Our organization naturally and inevitably leads to mass teaching and lockstep promotion; theirs rather to tutorial training and advancement according to proficiency. With us all the members of a class

are taught the same subjects in a body; with them a boy may study mathematics with one group of associates, Latin with another, and French with a third.

When I read, in the report of the Mosely Commission, the disparaging comments of our English visitors on the school work in the classics which they saw in this country, I was somewhat discouraged to find that critics of so friendly a spirit found so much to censure and so little to commend. But when, on investigation, I learned who our critics were, and what their antecedents had been; that they had personally experienced the classical training given in the English preparatory and public schools, and later at the universities, and that they were naturally imbued with the spirit of those institutions, I took heart again. From their point of view, their criticisms were natural and just; if they had been familiar with our environment, and had been capable of viewing our work in a sympathetic spirit, their observation would have been more enlightened, and their interpretation more perspicacious.

It is, of course, to be remembered that the schools which I have described are schools for the favored few, not for the unprivileged many; that the maintenance of them tends to perpetuate the social distinctions which, theoretically at least, we disapprove; that the higher standard reached by them in a limited range of subjects is purchased at the expense of the normal development, and therefore of the real interests, of a considerable proportion of the boys who attend them; that the individual attention lavished on the boys belonging to them exists side by side with a callous indifference to the mental development of the great multitude of boys who stand lower in the social scale; that national enthusiasm for universal education is relatively non-existent in England; and, finally, that in all these important respects our national standards are probably more altruistic, and therefore intrinsically nobler than theirs. If this is true, it is a proper subject for self-congratulation. But the fact that our lowest standard in education is distinctly higher than their lowest, and that our average is probably higher than their average, should not lead us to rest content with the undoubted fact that their highest standard of

secondary education is greatly in advance of ours. I am persuaded that, in the earlier and later stages of secondary education, and especially in the interrelation of the two, we have much to learn from England, and that, in some departments, we can more profitably go for instruction to the preparatory schools of England than to the Progymnasien of Germany.

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VI

INDIRECT COMPULSORY EDUCATION—THE FACTORY LAWS OF MASSACHUSETTS AND CONNECTICUT

In every system of universal education, there are two essential elements. First, schools must be established and supported; and second, all children of school age, either by public opinion or obligatory laws, must be required to attend them unless other adequate means of education are provided.

This was fully understood by the New England Puritans. The first two acts relating to education passed by the General Court of Massachusetts created a system of universal education; and Connecticut followed the example thus set when the code of 1650 was adopted.[1] From their establishment in the seventeenth century until early in the nineteenth, the fundamental principles of these systems remained unchanged. The school legislation of the intervening period was either to make more ample provision for the establishment and support of schools, or to increase the effectiveness of existing attendance laws. Indeed, the very first statute on education passed by Connecticut in the last century did little more than reiterate the principles set forth so clearly in the first code. This statute was enacted in 1805, and required all parents to see that "their children are able to read the English tongue well and know the laws against capital offenses." It differed from the code only in the penalty fixed for failure to comply with its provisions.[2]

These early laws were quite faithfully executed in both commonwealths. They expressed the educational creed of a majority of the people, and the high intelligence that has characterized the people from the earliest times is sufficient evidence of their utility. It should be said, however, that the success-

[1] See article "Beginnings in compulsory education," by John W. Perrin, EDUCATIONAL REVIEW, March, 1903.

[2] The Public Statutes of Connecticut (Hartford, 1808), p. 123.

ful administration of these systems was due primarily to the favorable conditions under which they were established. The people were homogeneous and well-to-do. They were intelligent and industrious. Besides this, the Protestant creed which they professed had been from its origin the stanch friend of such systems as these commonwealths had established. Indeed, universal education was the basal stone on which Protestantism had been reared. This explains the unanimity of thought relative to these systems, and the united action that was given to their support.

A new industrial system began in the latter part of the eighteenth century. This completely changed the simple social arrangement that had characterized New England for more than a hundred and fifty years. In England, the inventions of Hargreaves, Crompton, Arkwright and Watt had revolutionized the manufacture of textile fabrics. The old methods were superseded by organized manufacturing establishments. The cottage of the weaver could no longer be his factory. To support himself and family, he was now required to move to the nearest town and engage in the employ of some capitalist.

While this new régime was indispensable to the further economic development of England, it was attended with most evil consequences. Soon it was found that very young children could do the lighter portions of the work. Then many children from the poorest families in the south of England were sent by the poor-law-overseers to be apprenticed in the manufacturing districts of the north. Here they were treated little better than slaves. They were worked night and day, and it is said that "one gang, when exhausted, went to rest in the beds still warm of those coming on to work." [3] Besides this they were ill fed and poorly clothed.

The overworking and underfeeding of these pauper children soon led to an epidemic of disease. In 1796, the attention of the public was directed to the evils. This was done thru the labors of Doctors Aiken and Percival who had been appointed to investigate them.[4] The report they made empha-

[3] *The state in its relation to labor*, by W. Stanley Jevons (London), p. 53.

[4] Hansard's *Parliamentary debates*, third series, vol. xvii, p. 85.

sized so strongly the evils of the factory system, so far as it related to child labor, that Sir Robert Peel, in 1802, introduced a bill in Parliament to remedy them. The bill became a law. It is known as the "Health and Morals Act." In addition to providing better sanitary conditions in factories; better clothing for apprentices; fixing the number of hours of labor each day, and with some exceptions prohibiting entirely night work, it made provision for the instruction of all apprentices in reading, writing, and arithmetic.[5]

Thus it is seen that in little more than a decade of years after the establishment of the factory system in England, legislation was required for the removal of evils that had followed it. In New England there was the same tendency to establish factories. This tendency differed from that in England where there was greater capital and more skilled labor only in degree. Both manifested the same spirit. As early as 1785 Boston formed an "Association of Tradesmen and Mechanics."[6] Four years later Providence founded its "Association of Mechanics and Manufacturers" for "promoting of industry, and giving just encouragement to ingenuity."[7]

Another evidence that this tendency prevailed in New England is found in the establishment of a large factory in Boston in 1788 or 1789. This was for the manufacture of linen canvas. Besides this, Weeden says that "from 1785 to 1791 cotton was being introduced into the Southern States from West Indian seed, to meet the new demand for Northern manufacturers as well as for exportation."[8] But the real development of the manufacture of textile fabrics began under the Embargo Act. At the end of 1807 there were but fifteen cotton mills in the United States. Two years later eighty-seven more had been built. In 1810 Gallatin made his report on American manufactures. He roughly estimated the total annual value of all manufactured products at $120,000,000.[9]

[5] Jevons, p. 54.

[6] *Economic and social history of New England*, 1620–1789 (Boston), by William B. Weeden, vol. ii, p. 847.

[7] *Ibid.*, p. 850.

[8] *Ibid.*, p. 851.

[9] *History of the United States of America under the constitution*, by James Schouler (Washington, D. C., 1889), vol. ii, p. 298.

As in England, this economic development had its disadvantages. In both Massachusetts and Connecticut child labor was used. The children, however, were not so cruelly treated as in England before the "Health and Morals Act." They never were slaves in any sense; but the practice of binding out was common, and this usually resulted in loss of educational privileges. This evil was so great in Connecticut that by 1813 the old compulsory attendance laws were practically a dead letter in many localities. But the spirit of old Puritan days was not extinct. Strong efforts were put forth to destroy the evil. In 1813 the General Assembly took up the matter. A law was passed that required the proprietors of manufacturing establishments to give attention to the morals of children in their employ and to provide instruction for them in reading, writing, and arithmetic. The selectmen of each town were made a board of visitors to ascertain annually whether the law was obeyed, and to report all violations to the "next county court." [10]

When the statutes were revised in 1821 this law was reenacted and remained on the statute books until 1842, but it never realized the expectations of its friends. It had two defects. It contained no provision for school instruction, but merely specified that certain subjects should be taught. Thus the character of the instruction which after the teacher is the most important element in elementary education was left to the proprietors. The second defect was the want of a provision requiring towns under penalty to organize boards of visitors. Dr. Henry Barnard said of the statute in 1840, "It is a dead letter in nearly if not every town in the state. I know not of a single instance where the board of visitation authorized by the act has been organized." [11]

A new act was passed in 1842. This forbade the employment of any child under fifteen in any factory, or in any other business, until he had attended "some public or private day

[10] *Report of the Commissioner of Education*, 1888–1889 (Washington, D. C.), vol. i, p. 486.

[11] Public Acts Passed by the General Assembly of the State of Connecticut, May session, 1842 (Hartford, 1842), p. 40–41.

school where instruction was given by a teacher qualified to instruct in orthography, reading, writing, English grammar, geography, and arithmetic, at least three months of the twelve months next preceding any and every year in which such child shall be so employed." Violations were made punishable by a fine of twenty-five dollars to be paid into the treasury of the state. The evidence required that the child seeking employment had fulfilled the conditions prescribed was a certificate signed and sworn to by his teacher. Another provision fixed the hours of labor for all children under fourteen at ten. Any violation of this was made punishable by a fine of seven dollars for each offense.[11]

This law was a marked improvement over that of 1813. If it had had the support of public opinion, there is little doubt but that it would have destroyed the evil at which it was aimed. But it did not have that support, and soon it practically became a dead letter. State Superintendent Daniel C. Gilman in his report for 1866, says of it: "In many cases the proprietors or agents of manufacturing establishments would willingly see the provisions of the statute sustained, but they are well aware that the law is not obeyed thru the state, and are apprehensive that they shall lose both parents and children as operatives if they refuse the latter work."[12]

An important amendment was made to the laws in 1855. Before this date no age limit had been prescribed. In the new law the General Assembly fixed the minimum age at which children could take service in factories at nine. The law was again amended in the following year and the minimum age fixed at ten.[13]

The law of 1842 with various amendments continued in force twenty-five years. In 1867 it was superseded by a new act

[11] Public Acts passed by the General Assembly of the State of Connecticut, May session, 1842 (Hartford, 1842), p. 40–41.

[12] *Connecticut school report*, 1866, p. 82–83.

[13] Third Annual Report of the Bureau of Labor Statistics of the State of Connecticut for the year ending November 30, 1887 (Hartford, 1887), p. 156. The English parliament, in 1819, fixed nine years and upwards as the age at which children could be admitted to labor in cotton mills. The same provision was made in the Althorp Act of 1833. Hansard's *Parliamentary debates*, third series, vol. xvii, p. 85 *et seq.*, gives a history of English legislation on this subject from 1802 till 1833.

which fixed the penalty for working children more than ten hours a day, or fifty-eight hours per week, at forty dollars. Half the fine was to go to the person who made the complaint and successfully prosecuted the case; the other half was to be paid into the town treasury.[14]

These various acts but partially remedied the defects of the act of 1842. In 1869 a new employment law was passed. This was by far the most important piece of legislation relative to child labor yet enacted in this state. The law of 1842 forbade the employment of children under fifteen years of age unless they had been in school three months of the preceding year. The new law changed this limit to fourteen. Just why this change was made is not clear. It may have been a concession to employers and parents to make the other provisions of the law which were more exacting than the law of 1842 seem less stringent. By the latter act only manufacturers, agents, and superintendents could be prosecuted; under the new act all employers were liable to prosecution. The penalty was a fine as originally, but it was increased from twenty to one hundred dollars. It again improved on the act of 1842, which required boards of visitors to examine into the execution of the law and report violations of it, when it required state attorneys and grand juries to co-operate with them. But still more important was the provision that authorized the State Board of Education to appoint one of its number or some other suitable person as agent to enforce the law.[15] This agent was to be under the control of the State Board of Education at all times. The act of 1842 had left the execution of the law to local boards which at best meant that the law would be only partially enforced.

The most serious objection that could be urged against the act of 1869 was destroyed by a new law passed two years later. The act of 1869 took children out of factories, or kept them out if they had not yet taken employment. But it did not send them to school: this was the purpose of the law of 1871. The new law provided that all parents or guardians of children who

[14] Public Acts Passed by the General Assembly of the State of Connecticut, 1866 to 1871 inclusive (Hartford, 1871), p. 119.

[15] *Ibid.*, p. 333.

had been employed in factories or other business and had been temporarily discharged for the purpose of going to school should see that they were put into school. The penalty for non-compliance was five dollars for each and every week not exceeding thirteen in any one year.

This law with that of 1869 made a complete system of obligatory education for factory children. Many parents who were factory operatives regarded the new law as a species of class legislation and bitterly opposed it. Dr. B. G. Northrup, who was state superintendent when the act was passed, said: "The only objection made to this law, within my knowledge, is its limitation to the parents and guardians of those children *who are hired out*. They ask, 'while we are justly required to send our children to school, why are the parents of children unemployed, it may be the idle and vicious, excused?' This has the look of class legislation. Make this law impartial and universal in its obligation, and you remove the only real objection as yet urged against it." [16] The opposition of the factory operatives had a good result. It was one of the factors that led to the law of 1872 which established obligatory education thruout the state irrespective of class.

Since 1871 the law has been modified several times, but the principle has remained the same. As it now stands "no child under fourteen years of age shall be employed in any mechanical, mercantile or manufacturing establishment." "No minor under sixteen shall be employed" in such establishments "more than ten hours in any day, except when it is necessary to make repairs to prevent the interruption of the ordinary running of the machinery, or where a different apportionment of the hours is made for the sole purpose of making a shorter day's work for one day of the week." If the child is illiterate he must be at least sixteen before he can take such service, and then "cannot be employed except during school vacation" unless he attends an evening school or "complies with other educational requirements." [17]

Legislation on this subject did not begin as early in Massa-

[16] Report of Commissioner of Education, 1881–89, vol. i, p. 487.

[17] General Statutes of 1902, ch. 130, 132, 273.

chusetts as in Connecticut. The first Massachusetts act was in 1836. The immigration of a manufacturing and a foreign population had destroyed the former homogeneity of the people. Where formerly there had been unanimity of thought and action in the solution of educational problems there were now many differing opinions. Society was divided into sects and classes, not all of which espoused the cause of popular education. Some indeed antagonized it. The system that had answered the needs of the commonwealth almost from the day of its first settlement began to lose its vitality. It was seemingly unable to deal with the problem. In 1834, alarmed at the condition which confronted it, the state made provision for a public school fund; and two years later passed the act to which reference has been made.

The law was approved by the governor April 1, 1837. It provided that no child under fifteen years should be employed in any manufacturing establishment unless he had attended some public or private day school kept by some qualified teacher at least three months of the twelve immediately preceding the year in which he was employed. Employers who violated this provision were liable to a fine of fifty dollars which was to be paid into the town treasury for the use of the schools.[18]

This was a more advanced step than Connecticut had yet taken. It cannot be said, however, to have been a much greater one than England had taken in the Hobhouse and Althrop Acts of 1825 and 1833. The first of these made a thoro restriction of the labor of children under sixteen years of age and provided for a "quarter-holiday" on Saturday. By the act of 1833 the education of factory children was made compulsory. Children were not to work more than nine hours each day, and were required to spend two more hours daily in school.[19]

Massachusetts amended her act of 1836, in 1837 or 1838, so as to release employers from liability to punishment, in case

[18] *Laws of the Commonwealth of Massachusetts*, 1836 (Boston, 1836), p. 950.

[19] "It is said that this 'half-time' principle was quite accidentally discovered. Some means being sought whereby evidence should be available that a child was not working at a certain hour, it was suggested by Mr. Chadwick that presence in school would afford the best possible evidence," Jevons, p. 55, 56.

they were provided with sworn certificates that the children in their employ had attended school the length of time specified in the statute.[20] Horace Mann, who was Secretary of the State Board of Education from the date of its organization in 1837 till 1848, wrote earnestly of this law in his report for 1840. He urged the necessity of "limiting the greed of both heartless employers and unnatural parents."[21] In 1842 legislation was effected that limited the hours of labor of children under twelve years to ten. This was a backward step, for the standard thus fixed was not up to that set by either the Connecticut law of the same year or the English act of 1833. The Connecticut law had limited the hours of labor of children under fourteen to ten.[22] The English act went a step further and fixed the hours of labor for children between the ages of nine and thirteen at nine.

From this date until 1866 most of the legislation relating to obligatory education had reference to the truancy problem which had now become an exceedingly troublesome one. However, in 1865 an act was passed that required eighteen weeks of each year in school of all working children under twelve years, and twelve weeks of all between twelve and fifteen years. In this same year a resolution was passed by the legislature that authorized the governor to appoint a commission "to collect information and statistics in regard to the hours of labor, and the conditions and prospects of the industrial classes." Governor Andrew appointed such a commission in February of the next year. The commissioners first considered the education of the children. They said in their report: "A saddening amount of testimony has been brought before the commissioners concerning the frequent and gross violation of the law."[23] The commission favored the "half-time" system, and recommended the adoption of some plan that would

[20] Seventh Annual Report of the Bureau of Statistics of Labor of Massachusetts, 1876 (Boston, 1876), p. 264.

[21] *Ibid.*, p. 267.

[22] Third Annual Report of the Bureau of Labor Statistics of the State of Connecticut for the year ending November 30, 1887, p. 156.

[23] Seventh Annual Report of the Bureau of Labor of Massachusetts, 1866, p. 273.

lead to it, if it were deemed best not to adopt it immediately in detail. As an inducement to its adoption, the commission further recommended that where the "half-time" system was adopted, and carried out in good faith, the laws then in force pertaining to working children should not be considered binding.[24]

The recommendations of the commission were never embodied in a statute. But the same year the report was made, the most important piece of legislation yet given to Massachusetts on this subject was enacted. Under its provisions no child under the age of ten could be employed in any manufacturing establishment. Between the ages of ten and fourteen, no child could be so employed unless he had attended some public or private day school for not less than six months of the year preceding that in which his employment would begin. The school too must have been approved by the school committee of the place where it was located. Anyone knowingly employing a child who had not had this school training was made liable to punishment by a fine not exceeding fifty dollars. The act made one other important provision: Children under the age of fourteen who were employed in manufacturing establishments under the conditions already specified were not to spend more than eight hours of any one day in labor. Parents and guardians were made responsible for any violations of this restriction, under a penalty of a fine not to exceed fifty dollars for each offense.[25]

In the next year, 1867, another act was passed that related to the education and hours of labor of children employed in "manufacturing and mechanical establishments." This provided, as did the act of 1866, that no child under the age of ten could be employed in any manufacturing or mechanical establishment. Between this age and fifteen children could be employed only after they had attended some public or private day school under teachers approved by the school committee of the place where the school was located, for at least three months of the year preceding the one in which employment was taken.

[24] *Ibid.*, p, 273.

[25] Acts of Massachusetts, 1866, ch. 273.

They must also have resided six months in the state preceding the time their employment began. The school requirement was to continue every year until the age of fifteen, "Provided that tuition of three hours per day in a public or private day school approved by the school committee of the place in which such school is kept, during a term of six months, shall be deemed the equivalent of three months' attendance at a school kept in accordance with the customary hours of tuition; and no time less than sixty days of actual schooling shall be accounted as three months, and no time less than one hundred and twenty half-days of actual schooling shall be deemed an equivalent of three months."[26] Two years later cities and towns were authorized to establish and maintain evening schools for children over twelve years of age.[27]

Since 1870 legislation on this subject has been much the same in principle as that embodied in the laws of 1866 and 1867. In 1873 at the same session when the new compulsory attendance and truant laws were passed, a new act was introduced to further regulate the problem of child labor. But it failed to pass. It was offered in the next two succeeding sessions without avail. In 1876, however, it became a law. The principal feature of this law was that it made previous legislation on this subject apply to mercantile as well as to manufacturing and mechanical enterprises. This was done because of the large number of small boys who had taken employment in the large retail stores as cash and errand boys.[28] The essential difference between this statute and those of 1866 and 1867 was that it applied to children between the ages of ten and fourteen, whereas in the latter statutes the age limit was from ten to fifteen years. These latter laws had been modified by the compulsory law of 1873. This had extended the time of required school attendance to twenty weeks.[29] This provision was likewise extended to the new law.

[26] Acts of 1867, ch. 285.

[27] Acts of 1869, ch. 305. There was further legislation on this subject in 1872. See Acts of 1872, ch. 86. In 1883 the support of evening schools was made compulsory in towns having ten thousand inhabitants.

[28] Reports of Commissioner of Education, 1888–89, vol. i, p. 475.

[29] *Ibid.*, p. 474.

The next law was passed in 1888. This prohibited the employment of any child under thirteen years of age "in any factory, workshop, or mercantile establishment." Neither could such child be employed in any indoor work, for wages, during the hours when the public school of the place of his residence were in session unless he had attended school "for at least twenty weeks as required by law." Children under fourteen years of age could be employed in factories, workshops, or mercantile establishments only during the vacation of the public schools of the place where they resided, unless the employer kept on file an "employment ticket" and an "age and schooling ticket." The former ticket gave a description of the child to be employed, and contained a declaration of the employer's or agent's intention to employ him. The latter was a sworn statement made by the father, mother, or guardian of the child as to his age and to the effect that the requirements of the law as to schooling had been fully satisfied.[30]

The present law retains the provision for the "employment ticket" and the "age and school ticket." The school requirement is made to apply to all children between seven and fourteen. In connection with this is a provision to the effect that, "Whoever induces or attempts to induce a child to absent himself unlawfully from school, or employs or harbors a child who, while school is in session, is absent unlawfully from school shall be punished by a fine of not more than fifty dollars." The hours of labor of all minors under eighteen in manufacturing, mechanical, and mercantile establishments are not to "exceed fifty-eight in a week." This, however, is not to "apply during December to persons who are employed in shops for the sale of goods at retail." [31]

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[30] *Labor laws of Massachusetts.* Compiled by Horace G. Wadlin, Chief of the Bureau of Statistics of Labor (Boston, 1890), p. 67–79.

[31] Revised Laws of 1902. Ch. 54, 106.

VII

BOSTON SCHOOL ADMINISTRATION

The small school board is coming to be the rule in the large cities of the country. Boston is the latest municipality to swing into line. St. Louis, Cleveland, San Francisco, Baltimore, and Washington have all within the past fifteen years gone upon such a basis, while Philadelphia, Cincinnati, Detroit, and Pittsburgh are examples of cities at present awakening to the realization of the need of such reform. Philadelphia may be said to have made a slight gain in the recent legislative act (1905) reducing the number of the central board from forty-two to twenty-one, but the chief evil, that of sectional boards, remains untouched. The real reform measure calling for a single board of seven was defeated.

In the prospectus of the National Municipal League (1905) one reads the following: "The frames of government of our cities need readjustment to modern conditions." The small school board may justly be stated to be one of the most valuable applications of the principle of readjustment. It is but one phase of the effort to remedy the far-reaching evil of trying to make a crude system of representative popular government fit the highly complex needs of the modern large city.

The small school board idea, however, grows too slowly. To the mass of the people a reduction of the school committee means a loss of the democratic principle. The question submitted to referendum is very liable to defeat. Such was the case recently in Haverhill, Mass., when a legislative act authorizing a small school board was submitted to the voters. On the other hand, a small school board once in operation is soon fully established in the confidence of the people, and there is no thought of going back to the discarded form.

The history of the recent overturn in school administration in Boston brings out fairly well the ordinary course of events.

The measure to be outlined in this paper is the so-called " Storrow Bill," which provided that the then constituted elective board of twenty-four should be superseded by an appointive board of five. The appointive feature was subsequently abandoned for the elective type, in which form the bill became a law, going into operation January 1, 1906.

In the preparation of the bill under consideration a canvass was made of the conditions at present existing in the fifteen largest cities of the United States, all cities which had conditions in any way analogous to those of Boston. While previous investigations [1] had outlined much of the groundwork on which the movement was built, it was felt that additional and more recent data were desirable. The accompanying tables show the results obtained as the result of a " questionnaire " sent out to the cities upon the list. In each case the questions were asked of the mayor of the city, of the superintendent of schools, and of several resident citizens of recognized ability and fairness. The answers received were as a rule frank and illuminating. In no instance was the evidence greatly conflicting.

The second table contains a grouping from which some of the strongest arguments of the Storrow Bill were drawn. Note the classification of cities under the Large Elective Board group. All the evidence available from these cities showed that the large elective board is weak in constitution, in effectiveness, and generally in personnel. Every city investigated possessing such a system is seeking reform, and reform in most cases is prevented by corrupt partisan politics.

Some other pertinent facts gathered in connection with the above tables may be stated briefly as follows. New York City seems to be satisfied with the appointive method, but there is some sentiment that the present board is too large. However, much of the large board evil is obviated by the device of having an executive committee of fifteen which does most of the routine work of the full board. The two sets of figures in the case of Philadelphia and Pittsburgh are due to a system of central and sectional boards in each place. Buffalo in a strict

[1] Rollins, "School Administration and Municipal Reform." Report of Committee of Fifteen.

TABLE I.

Cities	Population 1900	Date of School Charter	How Chosen	Term of Office (years)	No. of Members	Chosen at large or by Wards	Evidences of satisfaction.
New York	3,437,202	1902	Appointed (m)	5	46 (15)	Boroughs	Yes
Chicago	1,698,575	1891	Appointed (m)	3	21	At Large	Remarks.
Philadelphia	1,293,697	1818	Judges of the Ct. Com. Pleas Part Elected	3	502 42[2]	Ward	No
St. Louis	575,238	1897	Pop. Election	6	12	At Large	Yes
Boston	560,892	1875	Pop. Election	3	24	At Large	No
Baltimore	508,957	1902	Appointed (m)	6	9	At Large	Yes
Cleveland	381,768	1892 1904[3]	Pop. Election	2	7	At Large	Yes
Buffalo	352,387	1892	(peculiar type explained below)				Yes
San Francisco	342,782	1900	Appointed (m)	4	4	At Large	Yes
Cincinnati	325,902	1904	Pop. Election	3	31	Ward	No
Pittsburgh	321,616	1856	Elected by sub-district board	3	234 29[2]	Ward	No
New Orleans	287,104	1888	App. by City Council and Government	4	20	12 by Ward, 8 At Large	No
Detroit	285,704	1889[3]	Pop. Election	4	17	Ward	No
Milwaukee	285,315	1897	App. by School Board Commrs	3	23	Ward	No
Washington	278,718	1900	Commrs. of D. C.	7	7	At Large	Yes

TABLE II.

Cities	Members	Date
	Appointive Boards	
New York	46 (15[2])	1902
Chicago	21	1891
Baltimore	9	1902
San Francisco	4	1900
Washington	7	1900
	Small Elective Boards	
St. Louis	12	1897
Cleveland	7	1892 (1904)
	Large Elective Boards	
Boston	24	1875
Philadelphia	502 (42)	1818
Cincinnati	31	1904
Detroit	17	Modified in 1880
Pittsburgh	234 (29)	1856
	Unusual or Composite Types	
Buffalo	None	1892
Milwaukee	23	1892
New Orleans	20	1888

[2] Central Boards.
[3] Modified at that date.

sense has no school board. There is a board of five which has an examining function but does not possess the powers and rights of a school board. The superintendent of schools is the school board in Buffalo. San Francisco has a small board which has received some criticism, but this criticism is not directed towards the size of the board, but towards its constitution. The board is bi-partisan and paid. Chicago has some strong and reputable supporters of the present system, but Carter H. Harrison recommends a reduction from twenty-one to eleven.

The small board, whether elective or appointive, works well. There is no evidence to show that one type is better than the other. There is nowhere discoverable any intelligent tendency to enlarge an established small board. Buffalo, with no school board, evinces no desire to possess one. In the presentation of these data it is not claimed that any hitherto undiscovered conclusions are presented. The facts stated here are but confirmatory. Every canvass of the question has brought substantially the same result.

Now the evils of large school boards, clear as they are to any impartial investigator, do not readily get into the popular consciousness. The average citizen has patriotic prejudices against changes affecting administrative machinery. He will suffer change, as a rule, only in one of two events,—when the system has become so bad that some particular incident becomes a public scandal, or in a period of reform when radicalism becomes the fashion. It is to be devoutly hoped that the present year of reform may be of advantage to school systems yet needing revision.

The present achievement of Boston was not due solely to one or the other of the conditions just mentioned. Just what factors were responsible cannot be adequately set forth within the brief confines of the present article, but they can be roughly outlined.

The act incorporating the City of Boston in 1822 provided for a school committee of twelve members. In 1832 the number was raised to twenty-six. In 1851 the committee was again enlarged, so that seventy-eight was the result. The next

change in the size of the committee came in 1865, when ninety-eight members made up the board. In 1874, when several outlying suburbs were incorporated into the city, the total number was raised to one hundred and sixteen—the culminating figure. In 1875 the number was reduced to twenty-four, which system persisted until the recent change went into effect.

Marked as was the reduction in 1875, the resultant board had nevertheless passed beyond its period of efficiency long before the present change. The best arraignment of the system just passing was made by Mr. J. J. Storrow, the author of the present measure. The following extract is taken from an address made before a legislative committee when the matter was up for consideration. The quotation will serve the double purpose of showing the evils of the past system and the virtues hoped for in the present. As Mr. Storrow was a member of the old board and is now chairman of the new, his own point of view is doubly valuable.

"The speeches, instead of being sincere efforts to enlighten the Board, are frequently mere partisan attempts to interject politics into a matter which should be decided on its educational merits.

"The Board is organized as tho it were a legislative and not an administrative body, when in fact its business is not to pass laws, but to deal with administrative questions.

"The president is placed high above his fellow-members in an imposing rostrum; the twenty-three members are grouped about in horseshoe form, each sitting at his legislative desk as tho he were a member of Congress. Nothing is ever said in a conversational tone. Many of the speeches are typewritten beforehand, and intended not for fellow-members of the School Board, but for the press and the gallery.

"Another thing that would soon strike a new member of the School Board is the fact that, altho he may be faithfully attending the meetings of his five or six sub-committees, yet he can never really grasp the school business. This is the inevitable result of the system; for, altho he may wear himself out in attending all the meetings called by the five chairmen of his five sub-committees, yet there are twenty-four other committees

grinding out business and putting things into operation without any notice to the Board, or else rushing matters thru the Board after an incomplete explanation.

"I think you gentlemen can see that we have here a system which is bound to give bad results. It is autocratic, and not democratic: practically all the power of the Board is exercised in private behind closed doors by three people. The superintendent is not present, much less the other members or the general public. Business is so split up and sub-divided that an honest and efficient member is practically helpless, because he can only watch less than one-fifth of it. The public meetings of the Board furnish but little protection, because a large part of the business never gets there. What little does, if it does not pass thru with the avalanche of votes taken at every meeting, is only discussed in formal speeches, which are intended to attract attention rather than enlighten, and be sensational enough to secure a headline in the next morning's paper rather than change the conviction of fellow-members.

"Now the present bill provides for a committee of five. The idea is that there shall be no sub-committees; that all business shall be transacted at meetings of the Board; that the public shall have the right to be present; that the members shall sit around a small table and discuss matters in a conversational tone, rather than exercise their oratorical powers in formal speeches addressed to 'Mr. President,' the newspapers, and the gallery.

"But it is contended by some of the opponents of this measure that twenty-four members of our present school committee are as busy as they can be and that, if we reduce the number to five, they will be overwhelmed with business and unable to perform all their duties. Now that, instead of being an argument against a board of five, is another reason why we advocate the number. The members of the present committee are all the time usurping the functions of the superintendent and supervisors, and constantly interfering with the smooth running of the system. We want a school board which will act in a critical and supervisory capacity, but not to take the running of the schools out of the hands of the officials who are

paid for it and can do it much better, because it is their profession for which they have been especially educated, and an occupation to which their life work has been devoted."

In the catalog of factors affecting the bill in question it is necessary to speak of prejudices, racial, social, religious, at work influencing popular judgment. The setting of Boston School Committee affairs, past and present, cannot be clearly viewed unless one looks frankly at the situation. It is safe to state that in most communities of the country one may best gauge the pressure of prejudice by the constitution of school boards. It is strange that this fact should be so largely ignored by educational writers.

First, the race factor: The Irish famine of 1846 brought the first influx of a new race into Boston's population. For the next ten years, the number of Irish coming in was large. The Irish in Boston to-day are for the most part the second and third generations, and form the largest single racial element. Next in number, and in the following order, are the Americans, who are the descendants of the early settlers, Italians, Jews, British-Americans, British, Russians, negroes, Poles, and Portuguese. With respect to racial, political, and religious conditions the changes that have taken place since 1846 may be summed up broadly as follows. The dominant race has changed from the English-American to the Irish-American. The Republican party has been superseded by the Democratic party. The Roman Catholic faith has the largest body of adherents, where Protestantism once held the whole body of inhabitants. The control of city affairs has passed from those of wealth, acquired or inherited, to the non-property-holding class. A glance at the facts respecting the nationalities in control in the year 1905 shows that the Mayor of the city, nine out of thirteen aldermen, the large majority of the common council, were of Irish or Irish-American descent. In the school committee of twenty-four, thirteen were of this parentage, three of Jewish origin, one bore an Italian name, seven were of "Yankee" stock, and one was a German. Herein one may see the force of the demand for race representation and how closely the ratio is preserved. Cleavages of this kind illustrate the evil

of malassimilation and the exaggeration of artificial distinctions.

The Irish have received in the past no little provocation to tempt them to organize for protection and control. When the first of this race came to Boston religious toleration was written in the constitutions of the national and state governments but not in the hearts of the inhabitants. The well-known example of the Know-Nothing movement back in the fifties is a striking proof of this statement. There is no more notable instance of unconscious irony than in Mrs. Hemans' lines on the early Puritan which read:

> "They left unstained what here they found,
> Freedom to worship God."

Not a little of the early animosity against Quakers and witches was later exhibited against the Catholic immigrant. The A. P. A. movement of only fifteen years ago showed a revival of these same fires of intolerance. The spirit of intolerance on the one hand and the deep-rooted resentment on the other have been and are to-day in a much less degree the cause of much suspicion and dissension. There is a sort of rude justice in this "irony of fate" which reversed the tables of race predominance in Boston. It is indeed an historical repetition of a Rome conquered by the barbarian she was wont to despise. The connection between this seeming digression into the racial factors in Boston and the school change under consideration will be made clearly evident in the latter portion of this article.

Next in importance as a factor bearing a relation to the matter at issue may be considered the chief organization having as its object the reform of school administration. I refer to the Public School Association or, as it is popularly known, the P. S. A. A sketch of this organization has already been presented in the columns of this Review (December, 1904). It is helpful, however, to present additional and subsequent phases to illuminate the relation of this body to the recent reform measure. In 1894 a special committee of interested citizens organized themselves into a band whose purpose was to elevate the position of the superintendent of schools. This idea

subsequently expanded into the afore-mentioned organization, having as its platform and basic principle of reform the elevation of the dignity and powers of the superintendent and the extension of the scope of the educational expert as represented by the supervisors and masters of school districts. The P. S. A. movement early attained a considerable degree of success. In the ranks of its workers and sympathizers were many of the best citizens, who had the interests of the schools at heart. But the P. S. A. influence steadily declined after 1902. In the fall of 1903 they lost their majority in the school committee. Early in 1904 the new committee proceeded to undo some of the work of the P. S. A. The election of teachers was returned to the jurisdiction of the division committees, and the superintendent, who had been previously "elevated," made a most rapid descent, until in June of the same year he was unceremoniously turned out of office.

The failure of the P. S. A. to hold its prestige was not necessarily a matter of fortuitous circumstance, nor was it an indisputable indication of degeneracy on the part of the electorate. There was a marked lack of genius displayed on the part of the workers in the earlier years of the organization. The very name, P. S. A., was an unfortunate venture from its similarity to the monogram of that notorious and obnoxious body known as the A. P. A. It did not take much of a stretch of the imagination to conjure some similarity of purpose between the two, a point which politicians were quick to seize upon. In the defense of the work of the P. S. A. referred to above is found this statement, "It (P. S. A.) was intended and consistently continued to be absolutely non-partisan and non-sectarian." The evidence available does not confirm the truth of this statement, especially the latter claim. The organizers may have intended to make the association non-sectarian, but their intention cannot be taken for the fact itself. The P. S. A. up to within two years associated and co-operated with a body known as the Independent Women Voters, an anti-Catholic society pure and simple, who form to-day the inheriting and perpetuating class of Know-Nothing and A. P. A. principles. When associated with the P. S. A. these voters were accustomed to

reject the Catholic names on the ticket. More than once they proposed as their own nominees individuals who were suspected anti-Catholic agitators. They waved the American flag over it all, and shouted, "America for the Americans." The P. S. A. confessed their error by repudiating the support of the I. W. V. in the campaign of 1904, and elected as a result more candidates without their support than in the year previous with it.

Another instance of the fact that the P. S. A. was not essentially non-sectarian appears in this—that out of eight of its early nominees, only one or two were Catholics. In the face of an unavoidable issue, this compromise seemed grudging and unfair. With each succeeding year the nomination of a larger proportion of Catholics induced the conclusion that the P. S. A. had been forced to an unwilling capitulation. When the new bill was under discussion, at any rate, the bulk of the Catholic voters, rightly or wrongly, looked askance at the P. S. A.

So much for the setting in which one must view the present successful attempt at school reform in Boston. As just pointed out, prejudice has been the chief bane to harmonious co-operation of the various possible powers of good. It was an obvious necessity that the measure should be guarded from all appearances tending to give occasion for criticism. To keep this policy meant a watchful eye. Breakers could be seen from almost every point of the compass. The movement could not be a P. S. A. scheme because any project from that source would be discredited. It could not be a Back Bay enterprise because that would be a try for control by the aristocracy. It could not be a Republican essay because Boston is a Democratic city. It could not be a Democratic plan solely because the measure was to be passed upon by a Republican legislature. Finally, it could not be a non-partisan notion because political leaders were fearful that it might be the entering wedge for a general non-partisan movement. This process of elimination did not leave many alternatives for consideration.

By a fortunate stroke the movement was launched as a one-man project. James J. Storrow was the man. The choice was fortunate in many ways. The faults of the visionary reformer, the conceits of the impracticable

theorist are not his. Mr. Storrow is a Democrat, hence of the dominant political party. He had assisted in the councils of the P. S. A., hence enlisted the good-will of that already organized reform party. As a man of wealth and social position he commanded the confidence of the upper classes. As a successful business man, business interests deemed him safe. As a man of recognized integrity and broad philanthropy he commanded the attention and respect of a wide circle of right-minded, well-meaning citizens of all classes. It is safe to say that a wiser move would be hard to conceive. The surmise is not unjustifiable that no association, no party, no other individual could have been more fortunately chosen to champion this cause. Justice would demand that there be mentioned here the activities of a dozen or more individuals who were stalwart supporters of this cause, but the limitations of space forbid. Perhaps the greatest mark of wisdom in the furtherance of the project was the keeping of ill-timed altho well-intentioned enthusiasm in the background. Women's clubs, Back Bay organizations, Public School Association, Good Government Association,—none of these were sought as champions of the scheme, tho the support of any or all of them was welcomed when it came voluntarily. Without doubt the attempt of any of these sources to take the lead in the matter would have so stirred the forces of popular prejudice that the project would have been dropped as inexpedient.

The measure was put before the public in January, 1905. A petition was circulated which from the character of the names was a weighty list. Every living ex-Mayor of Boston, with one exception, appeared thereon. It was a representative list as well, comprising men of prominence and influence of every rank and race. The plan of the campaign was simple, purposeful, and judicious. All efforts were directed towards putting the provisions of the bill in the most favorable light towards the public, the press, the legislators, and organized bodies of every kind. One of the anomalies of the campaign was the support which the measure met from a controlling portion of the Democratic machine. Reform measures as a rule are not so fortunate as was the bill in question. One rea-

son for this was the fact that the school committee personnel had been deteriorating steadily of recent years. The number, twenty-four, corresponded nearly to the twenty-five political wards of the city, and resulted largely in a ward system of representation. The constant and growing dissatisfaction with the state of school committee administration, expressed in the criticism of the press and agitated by the increasing energy of reform parties, had created a general uncomfortable situation which was becoming wearisome to the machine responsible for the majority representation upon the Board. The machine gained nothing by the system, and when this favorable opportunity came of gracefully unloading, did so with a sense of relief. The machine, however, did not attempt to create a unanimity of policy. There were large defections which succeeded in making considerable opposition

The legislative hearing in March (1905) before the Committee on Cities brought out very clearly the positions of the opposing parties. The appointive feature was selected as the vulnerable point of attack. The women's organizations in particular were strongly represented. The measure from its nature would disenfranchise the women, and thus the only result of many years' struggle would be swept away. Most distinguished among the champions of the women's interest in the bill was Mrs. Julia Ward Howe. The P. S. A. opposed the bill in its appointive form, but were willing that a change should be made, provided the resultant Board be elective. Several members of the present school committee opposed any change whatsoever, claiming that the present system was the best possible, and offered in testimony of the efficiency of the Boston schools the fact that the St. Louis Fair had awarded gold medals to the school exhibit.

The sentiment of the hearing was undoubtedly opposed to an appointive school board. The liberty-loving traditions of Boston apparently subverted by the measure, and the opposition to the loss of franchise for the women, conspired to show the impossibility of the appointive plan. In consequence the amendment was accepted that the Board should be elective, and as a

result the bill immediately received the support of many previous opponents.

The appointive feature, however, served the valuable purpose of drawing the fire of the irreconcilables. Much of their eloquence and vehemence had spent itself in battering down this luring and seemingly vital stronghold of the measure. The waving of the American flag, the allusions to the glories of the Declaration of Independence, as well as to the provisions of the Constitution, while irresistible shafts when flung against the appointive feature, were found impotent indeed when directed against the measure in the new citadel. There were discoverable no inalienable rights of man (nor of woman) which were endangered by having a small school board elected by the people to administer to the needs of the Boston school system. Not wholly daunted, the opposing forces remaining sought to find justification for objection to a small elective board. It was pointed out that a small board would be owned completely by the book companies, that such a small number would be a close corporation, and so on. The labor organizations brought forth the argument that small bodies are unfriendly to the cause of labor.

Despite all opposition the bill was favorably reported. The main provisions of the act were that the number should be five, the term of office three years, the method of choice by popular election, and that all rights, duties, and privileges of the large board should succeed to the small.

The bill was introduced into the House and passed thru two readings by large majorities. Previous to the third reading a very strong movement was made to attach a referendum amendment. Here was the crisis of the movement. The enemies of the measure had reserved this stroke for a final assault. Had they succeeded, it is doubtful whether the cause could have been carried at this time. The referendum would have committed the measure to the forces of prejudice, not of reason.

Representative McDonald, the legislative champion, presented some very cogent arguments against the referendum which undoubtedly caused its defeat. He showed that the

movement for the proposed reform was the result of some years of thought and inquiry; that it had involved a careful canvass of the country as to other systems and as to the opinions of educational experts; that the ordinary voter had not the means of knowing the question in its larger relations and the issues at stake.

The vote was close, 95 voting against the referendum and 87 for. No other obstacles were encountered and the bill, when presented to the Governor for his signature, was promptly signed and the cause was won.

The press of the city greeted the new law with unqualified approval. Interviews published with members on the retired board showed as a rule striking disapproval. While the reasons were varied, they all illustrated the maxim that "Privilege dies hard." The labor unions proved least reconciled to the new law, and sent a committee to wait upon the Governor to ask him for the reasons of his approval. The Central Labor Union subsequently passed a vote of censure upon Governor Douglas for his sanction of the school bill.

How the new school board was elected, what forces were active, what the present prospects are for genuine reform in school committee administration can only be touched upon in conclusion. The school campaign just passed can be rightly said to have been unique and the most encouraging in the modern municipal history of Boston. The result was contrary to what former conditions and precedents made probable, and in excess of what optimism could expect. The anomalies were many. The mayoralty contest was hot and complicated; party lines were strictly drawn; prejudices of all kinds were preyed upon. But in the school campaign all was different. There were exhibited such affiliations of interests as to lead all to believe that Boston can be in the strictest sense a *community*. Political parties got together. Reform parties showed an unusual amount of common sense in addition to customary enthusiasm. Three of the Democratic candidates were on the Republican slate; the Public School Association indorsed the Republican ticket as it stood.

The alembic for this condition of affairs was an entirely

new body of school board reformers known as the Citizens' Union. There is a lesson for other communities in the brief history of this body. The farsightedness of several public-spirited citizens told them some new force for school reform should be sought. The justification for this wisdom has already been set forth. Accordingly, a mass-meeting of citizens was called in one of the theaters. Speakers were invited to make addresses upon the good of the schools and upon the unusual opportunity presented for electing an entirely new board. The sentiment of the meeting, which was well attended and enthusiastic, crystallized into the purpose of persuading both the political parties to nominate good men. A committee of fifteen was chosen whose duty it was to wait upon the leaders of the parties to urge upon them the importance of putting upright and able men upon the school tickets. The constitution of the special committee was excellent. Men of all parties, races, creeds, classes, were represented. They had no direct connection with any parties or affiliations open to suspicion. Hence they dispelled old prejudices, and a wholly new confidence was the result. Success crowned their endeavors from the beginning. They did not seek to dictate; they did not preach; they simply demanded the one irreducible minimum of reform, namely, good men. And the parties listened. Not a single man against whom it could be said that there was reasonable cause for rejection was nominated by either major party. Mr. James J. Storrow, the author of the school bill, was a nominee on every ticket, and his subsequent election by a large majority may be looked upon as an approval by referendum of the change of school administration.

School board reform for the first time became a majority sentiment. "No Axes to Grind, No Debts to Pay," was the terse and sincere headline given to the public announcement of the Citizens' Union indorsement of candidates. The Citizens' Union did not discriminate between good men of different parties. Their object was not "who" but "what." As a matter of fact, they indorsed all the candidates of both the parties. In their public appeals they asked for the support of any five out of the seven different party candidates in the

field. They did oppose the candidacy of some four or five persons running independently whose records had been investigated and repudiated by the party slate-makers. The effectiveness of this plan of reform is best attested by the result. It is generally conceded that the best five of a good seven were elected. The two nominees who had only the regular Democratic nomination were beaten, whereas the City itself went Democratic as usual.

The Board as elected is ideal in composition. It is made up of good men and is splendidly representative. At the time of writing the régime has been in control but five weeks, a period too short to show large results. Already, however, the new Board is receiving praise for several new important policies inaugurated. Longer terms of office (six years) for superintendent and supervisors, economy of expenditure without loss of efficiency, a juvenile court for youthful offenders—these are types of problems already in the process of adjustment.

The specific lessons that can be learned from the recent school-law change in Boston may be summed up briefly as follows: They are two in number, the important part which a single individual may perform in bringing about reform, and the necessity of common sense in reform bodies.

It is evident that the matter of leadership is the crux. Reforms are conceived, begun, guided, defended only by the leader. The leader is the only fulcrum by which the world of civic unrighteousness may be forced from its orbit. The national aspect of the problem shows how ready the people are to rally around the true leader. The community is yet to be discovered which has lost its sense of shame.

VIII

DISCUSSIONS

THE MANUAL ARTS IN THE CITY OF NEW YORK

The recent progressive administration of the New York public schools, under Dr. Maxwell, has attained a great deal and pointed out the way to much of the highest value in education. Nowhere is this progress better manifested than in the stand that has been made for manual training, not only in the primary and grammar grades, but also in the secondary schools. There are now two magnificent manual training high schools in New York, and yet Dr. Maxwell encouragingly enough proposes in his last annual report, not only to use these schools as evening trade schools, and thus reach a large number of the young skilled workmen of the city, but recommends that some manual training apparatus be installed in all high school buildings. "It is not," says he, "in accord with sound educational doctrine to have either boys or girls without some practice in hand-work—some practice in adapting material to definite purposes—for the space of four years."

A policy of this kind is the most effective and reasonable reply to those who hark back to the days of the blue spelling-book and the little red schoolhouse, forgetting that these were parts of an unconscious system, in which the manual training of the farm or village home, and the nature study of daily contact with woods and fields, bore a vital and indispensable part. The present temporary disquiet, which sees lack of initiative, lack of resourcefulness and executive power widespread among our pupils, and which often mistakenly attributes these deficiencies to the kindergarten, to play-methods or to the doctrine of interest, is best treated by a wise advance in the spirit of the times, rather than by an impossible retreat in the teeth of an opposing civilization. Manual training in our cities has become not only a logical but a practical necessity, the only ques-

tion is, what are the particular functions it shall fulfill, and how is it to be related to other subjects. In the city of New York manual training, from the lowest grades up, includes the study of drawing, and both are taught by the same special teachers and put under the same supervisors. This is a great gain for both studies. The drawing becomes mainly a means, rather than an end in itself, and with this important reform, successfully thought out and accomplished, the manual arts as a whole, as we shall see later in detail, more easily yield their services to the rest of the curriculum. In this relationship, far from degenerating into a narrow and commercial utilitarianism, they gain their best life in losing it—sunk in use, they become an essential in the work of the school.

Last June it was my good fortune to see and study some of the evidences of this broad manual training policy at an exhibition held in the 19th School District under the direction of the Supervisor of Manual Arts of Manhattan and the Bronx. This, I understood, was but one of twenty such exhibitions given during the spring session, as object lessons and sources of inspiration for teachers and parents. Illustrative examples of the children's work were systematically and beautifully arranged in one of the fine new school buildings, filling all the available wall space from the lowest floor to the garret. The impression obtained was one of inner harmony of mental effort, an orderly evolution from the lowest primary grades with their richness of spontaneous effort to the better drilled and more organized successes of the older pupils. When, moreover, one reflected that not only the children of this district but 500,000 children thruout the city were receiving a similar training, the mere salutary size of the work of itself brought an access of faith in a rapidly approaching adequate and effective democratic education.

The new education differs from the old in making more demands upon its votaries. It represents a new graft upon the old tree of educational wisdom, and should absorb that which is essential in the past as well as add that which is necessary for the present. The New York Manual Arts Department has not forgotten to connect itself firmly with the past. There is no evidence that the work has been injected into the system

to stand or fall by itself alone. As might be expected from the organization of the department, one of the most striking general features of the exhibition is the way in which the work is shown to be related to the other parts of the course of study. The subjects which are treated are in a great many cases, perhaps the large majority, those which are already the subjects for study in language, literature, nature study, elementary civics, and science. Part of the inspiration of this work in correlation has doubtless come from the pioneer work of Colonel Parker in this field, and even a superficial glance thru the lower grades makes one feel that here is Parker's school over again, enlarged and better systematized. As an example may be taken the work in one third grade room where the story of Hiawatha forms the center of effort. The children knew the story well, and could give it, not only in their own language, but in the words of Longfellow. Around the room was a profusion of well-made diminutive tepees, canoes, baskets, ornamental head dresses, peace pipes, bows and arrows, and other articles illustrating the Indian life of peace and war. These were constructed of various materials,—bark, paper, wood, etc. On the walls were pictured illustrations of important scenes in the poem. Here the value of the previous construction work appeared. The tepees were drawn with a sense of their roundness; the pipes and baskets looked as if the artists thoroly understood them. The imagination was thus not overburdened with problems too difficult, but was made free to enter upon the characteristic features of picture-making, the dramatic intention, the composition, the handling of pigments, and the naïve beginnings of perspective. New objects of a more subtle character, perhaps never observed in reality, such as a mass of dark woods, a blazing fire, or a stretch of sea, were freely introduced with the natural abandon and astonishing success seen only with geniuses or with children. It was quite plain, not only that Longfellow had become more concrete and interesting, but that each child had built for himself with the work of his own brain and hands a habitation for his mind more important than any mere appreciation of the poem, and more lasting than any of the products which he had thrown off in the process.

In the higher grades the work shown was frequently correlated with the study of science; and here, since the effort was more elaborate, it was carried out in the manual training shops. To mention some instances, aquariums were made after designs carefully supervised by the instructor, for the purpose of facilitating the study of aquatic forms of life taken up in the school. The study of acoustics developed the need for a sonometer or for a rapidly rotating syren. A study of time measurement gave rise to a series of apparatus from the water clock and the simple pendulum, up to a more elaborate wooden timepiece, illustrating the principle of escapement. It is readily seen that when the science teaching makes use of the allied department of manual arts, it finds a great re-enforcement both in thoroness and in interest.

Altho the thought of usefulness in some form or other was a constant preoccupation of all this work, correlation with other studies was not the only way in which this was gained. Connection with life itself was constantly in evidence. In the lower grades, the construction work, the designing, and the illustrating were found very frequently centering around the life of the street and of the home. Here, *e. g.,* was to be seen a series on transportation; wagons, street cars, wheelbarrows, etc., were made out of wood, little toys much more educative and less likely to be destroyed than those bought in the stores. Following the solid figures came the same objects cut out of paper and folded so as to stand up,—a more abstract variety of construction taking less time in manufacture, more easily manipulated and reproduced, and psychologically paving the way to the more imaginative forms of pure representation which naturally followed, resplendent in color and action. At this, the picture-making stage, the dramatic possibility formerly added to the object from the outside by the child's use of it, and hence limited in range, now becomes a corporate part of the product itself, and we have men and children shown as using the various means of transportation, taking trolley rides, wheeling baby or doll carriages, driving coaches or coal wagons, traveling ice cream vendors calling their wares, scissor grinders trundling their one-wheeled carts, each with its appropriate and sometimes recognizable background—in a word, all the varied panorama of the New York streets.

The equipment and furnishing of the interior of houses offered another of the many interesting series. Chairs, tables, beds, dressers, etc., etc., were treated in the same manner as above; type-models of a simple character first being used to train the child in the elements of structure. In the paper cutting and folding, for example, the child is first shown how to make a cube and, after this, forms such as chairs and tables. When he has made the table after the type-model, he is encouraged to produce individual variations. Here his adaptation and inventiveness come into play. In many cases no two examples following the type-model were quite alike. In this series were shown some interesting interiors of flats, all the various rooms, paper on the wall, pictures hung, carpets on the floor, curtains, flower pots with paper flowers, put together by the children with the greatest taste and skill.

Altho usefulness in other studies or to the child at home or at play was the principal motive in the selection of centers, it must not be supposed that decoration was neglected. In following thru the different grades we see a distinct evolution in the sense of the beautiful. This was, however, always kept in its place as an incidental to other purposes. The somewhat dilettante motto, "Art for Art's sake," had evidently given place to a much broader one representing the æsthetic as an overflow or surplus rooted in something deeper than itself. Art for Life's sake tolerated no mere exercises in curves or designs, no impossible borders for Turkish mats that were never to be made or seen, no mere gymnastic spotting or voluting, no balancing of abstract schemes of color or notan, but always the real object, whether copybook cover, picture frame, letter holder, neck-tie box, menu card, or tray cloth, calling for a particular and individual æsthetic judgment in each particular case.

Perhaps still more characteristic of this exhibition than the principle of correlation or the subordination of the merely beautiful is the influence of child-study. The children have been viewed not as mere recipients of a course of study or material for administration, but as human beings with ideas of their own. Expression, as we have already seen, is constantly encouraged. The energy of the corps of supervisors and teachers

has been more largely spent in stimulating interest, awakening observation, provoking discussion of work done by the children, and thus helping them wisely to help themselves than in dictating work conceived by someone sitting in the arm chair of a distant office. Opportunity is given not only for the grade teacher to adapt, modify, and invent, but for the child also. The very complete and pertinent outlines issued for the guidance of supervisors and teachers are the result of their own discussion, and are accepted as suggestions rather than commands. The power to execute, so indispensable in life, is thus liberated and utilized. If it were not for facts to the contrary, it would seem impossible that manual training or an art department in any city could maintain its existence for a year without freedom of this kind for the subordinate teacher and the child. Authoritative and compulsory dictation is an interference in other school studies, but must be positively stifling in these.

Among the most useful and interesting contributions of the child-study movement have been the studies on children's drawing. Mr. Earl Barnes and Dr. Lukens have shown that children begin to draw as they begin to talk. Anything that will stand for an idea is produced and accepted. This is due, doubtless, to their breadth of classification founded on as yet imperfectly developed associative centers or apperceptive masses. A child thus has no difficulty in drawing the four walls of a house in one view, or two eyes in the profile of a human face. Even when he looks directly at the object he draws ideographs rather than pictures. This state of mind continues until about nine or ten when his discrimination becomes keener. From now on he gradually becomes able, not only to draw what he thinks he sees, but to see what he draws. At this point his earlier style becomes distasteful to him and his power of observation becomes so much better than his ability to execute that he very frequently drops pencil and brush altogether, or, if compelled to persist, works without interest or ambition.

The early stage of this child-study problem, as we have already noted, has been frankly and delightfully met by the department of manual arts. It is the latter part which demands more care. Two things are done. The early uncritical stage, altho allowed every scope, is constantly subjected to

stimulation with the hope of short-circuiting it and bringing in some criticism and some better execution a little earlier than could otherwise be expected. Secondly, from the fourth grade on, especial effort is made to focus the child's attention on the necessity for good workmanship as well as expressiveness, so that when he comes to the crisis, which as Stanley Hall suggests may represent in the child the culmination of a period of early maturity in a previously pygmy race, he finds himself equipped with a certain facility of technique with which to meet the new period of development upon which he is entering. The results seem to warrant the effort made. At least, there was certainly to be seen on the walls of this exhibition a steadily growing command of the power to draw accurately and readily, and in some cases with subtlety and distinction, as one followed the rooms from the lowest to the highest grade.

But of all principles governing this work, the most interesting because the newest, as well as the most vital, was that of community interest. This is already glimpsed at in as far as many of the centers chosen concern social life in the school, the street, and the home, altho this is but portraying such a life or looking at it from the outside. Expression, too, of any kind, involves a certain amount of the social spirit, but that which succeeded in carrying to the present writer the greatest significance of a socializing nature was the production of a considerable number of things not by the class as a whole or by individuals, but by groups. The constituents of these were chosen, or offered themselves in such numbers as would best facilitate the work to be undertaken. A foreman was selected and was responsible for the completion of the work and the disposition of minor details.

An understanding of the working of these groups would doubtless need more intimate acquaintance than that afforded by the work they produced. The details of how the groups were formed, whether the foreman represented real leadership of idea and socially organizing power, or whether he was simply a delegate of the teacher, are matters of the greatest importance for one interested in the broader question of education for citizenship. But the fact that manual training had spontaneously discovered that groups with leaders of whatever

kind were an advantage in supplying its own educational needs, is of itself a hint of the greatest value for many teachers who are looking for much fresh help in the teaching and management of their classes in a better understanding and a better application of the social forces at work in every natural human association.

It is evident, even from this very short and inadequate account, that we have in operation in the work of this Manual Training Department a very deep and comprehensive idea of education. As summed up or briefly condensed by Dr. Haney, the Director of the department *(Year book of the Council of Supervisors of the Manual Arts for 1904):* "Each subject admitted to the curriculum must be both developmental and socializing, and must have the element of reality. Unity of the subjects of the course is essential; it is dependent upon the directness and force with which each subject makes for the general aim.

"Methods of teaching are designed to give the child occasion and motive for all information sought; they aim to lead him to make personal adjustment, they seek their rise in his interests, and their end in his definite achievement. They would see all facts properly related and the curriculum as a whole co-ordinated by the development of subjects from common centers. Technical skill they would develop only in response to a realized need."

When principles of this kind do not end in statement but can be verified in the process and recovered in the actual product, we have largely solved the problem of administration, which like the soul cannot be separated, at least in this world, from the body to which it is indissolubly united, but must permeate it to every atom and draw back from it sustenance and power. Organic education, however, does not mean the mere equality of different factors or persons in the whole. It means rather their greatest possible differentiation, so long as this differentiation is governed by the solidarity of all. A monarchical or military organization of school systems or school departments is suitable only for times of strain and ought to be tolerated only at the beginning of things. Later on such forms of organization represent arrests of development which speedily

pave the way for complete decay. Organic education means life itself for every child and for every teacher. This is always the best preparation for life and results in the truest democracy.

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STANDARD LATIN AND GREEK GRAMMARS

In connection with the discussion, more or less current, of the place of Greek and Latin in our educational system, a word with reference to grammars may not be out of place.

The number of Latin grammars on the market is large and growing larger almost every year. They all have their good features, and if students used any one exclusively, they could hardly fail to gain a good working knowledge of the language. The transition, however, from the secondary school to college sometimes leads to a change of grammars, and then the student's troubles begin. But far more serious and more frequent than this is the confusion which arises, at least in the first years of college life, when part of the students have used one grammar in their preparatory work, and part of them another.

Ideally, freshmen in college should have such a complete knowledge of Latin syntax that little or no reference would need to be made to the grammar during the year; actually, however, it is a minimum knowledge that the average student possesses. If now every construction needing explanation were presented to the student in terms already familiar to him in part, the principle would be brought vividly before his mind and the impression be deepened. But the real situation is quite the reverse. In most colleges the Freshman class is composed of students from a wide area, from many high schools and academies. In one school Allen and Greenough's grammar was used, in another Bennett's, in another Gildersleeve's, in yet another Hale and Buck's, and so on thru the list. The professor may explain a construction according to Allen and Greenough's grammar. To all in the class familiar with that work the explanation is clear, and their grasp of the subject is made surer. To the rest the matter is entirely new; possibly they listen, possibly they play checkers. The professor may explain the point according to each grammar and so meet the

needs of all the students, but that method wastes the time of the class and cannot often be employed. Still further, this difficulty is even greater and more apparent in composition work, where there is need for drill in construction, and where in addition to a variety of grammars there is an ever increasing number of composition books, each of which tends to be an epitome of Latin syntax with principles stated lucidly but variously.

In Greek the situation, which for years has been simpler, is fast becoming the same. For more than a generation students have been trained in either Goodwin's Greek Grammar, or Hadley and Allen's. The possibility of "confusion worse confounded," or of a waste of time in the classroom was nearly at the minimum. Recently, however, at least two new grammars have been put upon the market and others are threatened. Furthermore, just as in Latin, the Greek first year books and composition books tend to be independent grammars. Should not a halt be called?

A remedy, somewhat as follows, the writer suggests. Could not all who have written Latin grammars, composition and first year books, or who are meditating such action, meet in a national congress to plan a standard Latin grammar? At such a congress the whole field could be canvassed, committees appointed, and work assigned. After a few months, or a year, there could be another meeting, the results be reviewed and arrangements for publishing perfected. A standard work constructed in some such way as this, and used thruout the country, would make for unity of impression and advance in the knowledge of the language on the part of a larger number of students than at present. In the years immediately following such a publication, scholars could present the results of their researches and advocate their respective views in classical and philological journals as at present, and then, at the end of five or ten years, a revised edition of the standard grammar could be prepared in practically the same way. This new edition might then be introduced in connection with first year classes in secondary schools, and so gradually supersede the old one. Another revision might be made after a corresponding term of years, and so on.

It may be objected, at the outset, that the differences between Allen and Greenough and those who follow their lead, and Gildersleeve and those who are nearest in agreement with him, are very vital, but in the interests of the language and of the students who now amid, as it would seem, needless difficulties wrestle with it, might not those differences be harmonized?

Objection to such a plan may also be made from the point of view of the publishing houses. What is to prevent their publishing what books they choose, and introducing them by those means already known to the trade? But if all interested in the production of Latin grammars are pledged not to take independent action, there will be no unauthorized grammars to publish. The work of publishing the standard grammar could be allotted to different houses, or some one house could do the publishing and the present book firms could be distributing agents with exclusive rights in certain sections of the country.

Then, too, it might be objected that the right of any Latin scholar to get out a grammar would be infringed. But if he has a good idea, he can enter the discussion in the journals and, perhaps, ultimately get it incorporated in a new edition of the standard work with consequent compensation. Far better this than the present babel.

It may also be argued that the present differences in grammars are good for the student. He learns not to depend upon any one source. He comes to compare grammars, and in consequence has a broader outlook upon the language. Not many students appreciate this opportunity when they have a long lesson in Livy, Horace, or Tacitus to prepare, with trigonometry, French or German, English, and several other subjects awaiting their attention. They are likely to use the grammar with which they are most familiar, and if on the following day the explanation given in the classroom has no points of contact with their previous knowledge, the whole matter remains for them an enigma. Until the later years of a college course, added facility in the use of the language and appreciation of its literature properly receive the emphasis. A comparison of views upon nice points of syntax may well be left

until the student takes up the intensive work of the seminar room.

That such a project as this is ideal, and that in many quarters it will be pronounced wholly impracticable, the writer is well aware. But if the present difficulties are real, and it would seem that they are too obvious to deny, and if a better mastery of the Latin language is one of the desiderata in classical circles, and if colleges and college work are always at least supposed to lay hold upon the ideal, why should not something of this sort be tried? In fact an approximation to this plan is already realized. Within the last few years Allen and Greenough's Latin Grammar has undergone revision. The men who had charge of this work might well have constructed a new grammar and so have increased, rather than have lessened, the confusion. They chose to revamp a standard work rather than to create one *de novo*. Why may we not hope, why should we not demand that this be done on a larger scale in the interest of the students and of the language itself?

Exactly the same plan could be followed in connection with the Greek language with equally good probable results. It is to be hoped that something of this sort may be made effective within the next few years.

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IX

REVIEWS

The making of English—By HENRY BRADLEY. New York: The Macmillan Company, 1904. vii+245 p. $1.00 net.

Growth and structure of the English language—By OTTO JESPERSEN, Ph. D., Professor in the University of Copenhagen. New York: G. E. Stechert & Co., 1905. iv+260 p. $1.00 net.

These two books are held together not only by their general similarity of subject but more especially by their similarity in method. Both are intended for untechnical readers; Mr. Bradley says that his little volume is written for educated readers unversed in philology, and Professor Jespersen declares his purpose to be "to write at once popularly and so as to be of some profit to the expert philologist." The books are, both of them, popular in the best sense of the term. The general reader will find here much to interest and instruct, and the professed philologist need not fear finding either perfunctory or commonplace.

The point of view which the authors assume toward their subject is, if not entirely original, one at least which students of English have too much neglected. Their purpose is not to give an exhaustive history of the English language, that is, a statement of all the facts of the language, but to go behind the facts, and, as Mr. Bradley says, to study the "causes that have produced the excellences and defects of modern English as an instrument of expression." Professor Jespersen announces his purpose in somewhat similar language; his aim is "to characterize the chief peculiarities of the English language, and to explain the growth and significance of those features in its structure which have been of permanent importance." He attempts also "to connect the teachings of linguistic history with the chief events in the general history of the English people so as to show their mutual bearings on each other and the relation of language to national character."

The books thus enter into the inheritance of the store of

learning which the historical students of language have laid up for him who has the wisdom to avail himself of it. In many ways all previous scholarship in English is but a preparation for the kind of scholarship exemplified in these volumes. Altho the historical study of the language of the earlier periods has yielded results of the greatest importance and is of course necessary for the intelligent interpretation of early texts, it is the living language considered "as an instrument for the expression of thought" that is most abidingly interesting. It is difficult to see much justification for that historical study which does not get beyond the statement of the objective fact, which does not lead out into the study of the operations of the minds which lie behind the phenomena of the language. And it is because these books turn from the familiar chronological and descriptive history of the language and try to write, in a systematic way, what might be called its psychological history that they are truly important.

The six chapters of Mr. Bradley's book fall into three main sections. The first section (pp. 16-79) discusses the English grammatical system; the second section (pp. 80-214) is devoted to the study of the English vocabulary, and, as one might expect from Mr. Bradley's known interest in lexicography, this is the longest section of the book; the third section (pp. 215-240) treats briefly of some makers of English, of certain men whose skill in the use of language was such as to enable them to impose their inventions upon popular usage. Phonetic changes considered in themselves, and apart from their influence on the development of the grammatical system, are disregarded as falling outside the purpose of the book, which, to repeat, is to study only those characteristics of the language which are important for its greater or less efficiency in the expression of thought. Modern English is neither better nor worse than old English, Mr. Bradley thinks, because in many instances its sounds are different. In general we must agree to this proposition; Old English *a* is no better than its modern equivalent, long *o*. But in other instances has not the pronunciation of the language really become simplified? as, for example, in the vocalization of consonants, *dæg* > *day*, *slægen* > *slain*, *swelgan* > *swallow*, etc. Initial *hl* simplifying to *l*, as

in *hlaf* > *loaf*, and numerous similar changes, are also clear gains in economy.

In the making of English grammar the most striking changes which the author notes are those which have affected the inflectional system, the changes which have turned English from a synthetic into an almost completely analytic language. The causes of these changes Mr. Bradley considers to be two; first, phonetic change, resulting in a confusion, a leveling and a final loss of inflections, and secondly, the mixture of peoples speakinng different languages, resulting in the formation of mixed dialects and the gradual weathering away of the less easily apprehended grammatical distinctions of form. The desire fot uniformity the author regards as having had very little to do with the evolution of English grammar. It seems perfectly natural that this should be true, since the rules of uniformity are the creations, the abstractions, of the professed grammarian, and enter very little into the consciousness of the natural users of the language. Mr. Bradley's summing up of the results of inflectional loss is not entirely optimistic, as it is, for example, in Jespersen's *Progress in language*. Particularly in writing modern English, Mr. Bradley thinks there is danger of ambiguity which an inflectional language would be free from. Unfortunately, no examples are given, and it is difficult to see just what sort of ambiguities the author has in mind. Even those examples of colloquial expressions which are cited, as *he's* = either *he is* or *he has, I'd* = either *I had* or *I would*, cannot be regarded as really ambiguous; to the grammarian they may be ambiguous, but in actual use they never result in any logical uncertainty.

Many other topics are interestingly presented, only a few of which can be mentioned. The Old English *-es* and *-as* endings of the genitive and the plural respectively are explained as persisting according to the principle of the survival of the fittest: *-es* being only a genitive singular ending and nothing else, and *-as* only a nominative and accusative plural, the two endings came to be regarded as the type endings for the two categories. The change from grammatical to natural gender Mr. Bradley regards (pp. 47-50) as "one of the most beneficial changes which the English language has undergone."

The passing of the subjunctive he also views with equanimity (p. 53). The generalization of *you* as the pronoun of address, and the consequent loss of *thou,* he regards, on the contrary, as a distinct loss to the language (pp. 62-63). Professor Jespersen's views on this point are diametrically opposed to Mr. Bradley's. He looks upon the loss of *thou* and the extension of the politer *you* to all persons as a sure indication of the essential democracy of the English character. "English has thus attained the only manner of address worthy of a nation that respects the elementary rights of each individual" (p. 237). But it may be doubted that the English *you* means as much as Professor Jespersen makes it mean. The loss of the *thou* is probably due to the common English tendency to get along with as few words as possible; and certainly as much contempt and scorn can be put into our modern *you* as the older *thou* was ever capable of expressing. In the conclusion of this section of his book, Mr. Bradley expresses the opinion that the making of English grammar, whether for better or worse, is now a finished process, that the "grammar will remain for centuries very nearly what it is now." The reasons assigned for this belief are the general spreading of education and conservative literary culture, and the fact that inflectional simplification has gone as far as practical convenience will allow. Mr. Bradley holds out no hope, therefore, to those who would like to see the adoption of a common gender pronoun, a real second person plural, and similar grammatical reforms.

The concluding paragraph of the book takes an optimistic view of the language of the future. Mr. Bradley sees no reason why the English to come should not be a better, that is more efficient, language than the English of the present. He assumes the reasonable position that language deteriorates only as the thought and general character of the people who use it deteriorate. As he has no fear of such a fate for the English people, he concludes that it is "not an unfounded hope that the future of the language will be a history of progress, and that our posterity will speak a better English—better in its greater fitness for the uses for which language exists—than the English of to-day."

Despite the identity of general subject, the topics discussed

by Professor Jespersen in his volume differ considerably from those treated by Mr. Bradley. Professor Jespersen's impressions are interesting, also, as being those of an outsider, of one who certainly has an intimate acquaintance with the English language, but who, nevertheless, approaches it with the freshness of interest and the sense of novelty which are possible only to a foreigner. The opening chapter of the book, which will be recognized by those who heard it, as an address delivered in the autumn of 1904 at Columbia University by invitation of the English Department of that university, is an attempt to sum up a foreigner's impression of the English language. The adjective which Professor Jespersen finds to be most appropriately descriptive of the language is masculine. There is a certain robustness, brevity and directness in the language which leads Professor Jespersen to assign as its dominant note the quality of masculinity. On the other hand, Professor Jespersen finds that the language is wanting in fineness, in subtlety of expression and cadence, in those qualities which may be designated as feminine. The fact that Professor Jespersen's impressions are subjective—they could not well be otherwise—that they are expressed in the terms of a poet's metaphor rather than in the logical formulæ of the scientist, does not detract from their significance. We feel that he has given us a real characterization of the English language, one certainly that sets it off sharply from French and the other Romance tongues, and, in less degree, from its own cognate Teutonic tongues.

The remaining chapters of the book treat of more specific questions in the history of the language. Attention may be directed particularly to the explanation of the fact that few Celtic words were taken over into the language in the Anglo-Saxon period (p. 39), to the discussion of Anglo-Saxon synonyms (pp. 51 ff.), to the undoubtedly sound inference that the large vocabulary of words which have to do with the sea in Anglo-Saxon poetry is due to the fact "that the nation *had been* seafaring, but had given up that life while reminiscences of it were still living in the imagination" (p. 53). All thru this section of the book devoted to the study of vocabulary one is charmed by the continual freshness of the examples cited and

by the keenness and subtlety of the interpretation of the significance of borrowed words. The discussion of the French element naturally takes up the largest space. Professor Jespersen uses a new term in accounting for the extravagant borrowing of French words in the Middle English period. This movement, a sort of Gallomania as it has been called, is accounted for by Professor Jespersen as due to English snobbishness—a charge which the author thinks may still be laid at the door of the nation. Borrowed French words are consequently such as generally have to do with ideas pertaining to the social and intellectual aristocracy of the people. They differ thus strikingly from the Scandinavian loan element, which is altogether democratic in character.

In his discussion of the Greek and Latin loan element, Professor Jespersen is very bitter in his arraignment of the learned vocabulary, of those words which "are used in dead earnest by people who know that many big words are found in the best authors and who want to show off their education by avoiding plain everyday expressions and couching their thoughts in a would-be refined style" (p. 148); and he cites the instance of Canning's inscription on Pitt, "he died poor," which a London Alderman wished to turn into "he expired in indigent circumstances." But it seems rather hard to make the language responsible for the pomposities and absurdities of the ignorant word-monger. The curse of fine writing is certainly one which always hangs suspended over the head of the writer of English; on the other hand, the judicious use of "big words" gives a variety to English style, a shading in effects of humor, ornament, and cadence, which fully compensates for the crudities of the unskilled user of the language.

The ninth and next to last essay of the volume treats of the language of Shakspere and of the language of poetry in general. Many of the details discussed here are so obvious to the native user of the language that they seem, at first, hardly worthy of comment; when regarded, however, from the outside point of view of one to whom the whole language is more or less strange, they appear in a new and more significant light. The remarks on the language of poetry, especially, one would gladly see elaborated into a complete grammar of poetry.

In his last chapter Professor Jespersen gathers together a few characteristics of Modern English, the use of the democratic *you*, which has already been mentioned, the avoidance of oaths and swearing in general, the fondness for Biblical phraseology, the tendency towards prudery, the fear of the plain word for the plain thing. Finally statistics are given showing the great expansion which has taken place in the use of the English language in modern times. To the author's bibliography of this topic should be added Professor Brander Matthews's suggestive essay "The future of the language" in his *Parts of speech*. Prophecy is at all times dangerous, but in the present instance it is difficult to restrain the imagination from dwelling on the vast possibilities of the English language of the future.

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X

NOTES AND NEWS

"The Sceptres of the University": Diels' "Antrittsrede," 1905

One of the few formal "functions" to be still seen in German universities is the *Rektoratswechsel,* or annual ceremony of transferring authority and its external symbols from the outgoing to the incoming rector. At Berlin an important feature of the ceremony is the use made of the "academic sceptres," the outward and visible sign of the jurisdiction of the rector. The hand of the new incumbent rests upon these while he takes the oath of office, after which he receives them into his formal custody.

Professor Hermann Diels, when inducted into office on October 15, 1905, delivered an address of singular interest and value, dealing with the history and signification of these emblems. The two belonging to the University of Berlin were originally the property of the former University of Erfurt, presented to it on the occasion of its tercentenary festival in 1692; when that university was discontinued in 1816, they were made over to the new institution in Berlin, then a lusty infant of six, which wisely preferred them to brand-new ones offered it by the Prussian Ministry of Education.

The sceptre represents the staff in use from the earliest times among Teutonic peoples in the ceremony of oath-taking, as a symbol of the penalty for perjury or breach of oath; and the custom of touching this staff with the hand was originally a reference to the magic power once supposed to reside in it. Among early Greeks and Romans, as among Oriental nations, the same feeling prevailed; the budding of the cut rod, whether viewed as impossible, as in Agamemnon's refusal to give up Chryseis to her father, or claimed to have occurred as a miraculous event, as in the legends of Tannhäuser, of Herakles, and of Aaron, points to the divine power inherent in the tree and persisting in the staff even after separation from the parent stem. The new science of comparative religion has brought to

light many astonishing examples, among people of to-day as well as among the ancient and mediæval men, of the prevalence of this feeling. "The original meaning of these symbols is everywhere this, that prince, judge, priest, or speaker in an assembly, in brief, anybody that has to speak or act in public with authority, grasps and uses the staff as a reminder of the protecting deity that draws near and gives strength to him, the single weak man, in his position of responsibility. Thus these sacred staves, these sceptres, in their progress from king to king, from generation to generation, from university to university, embody, so to speak, the good spirit that watches over the separate generations and corporations; and when the rector makes his vow upon these ancient sceptres he calls as it were upon the genius of the university to be his witness and protector. He solemnly promises to shape his decisions and to administer his office not only to the best of his subjective judgment but also in harmony with the traditions of his illustrious predecessors and with the spirit of the university as a whole."

The spirit of a corporative entity is often not less real than its eternal existence; it is not merely the aggregation of units which at first sight alone appear to constitute it. So growth and prosperity of the university are conditioned by the concentration upon it of all conceivable impulses, internal and external; but it takes into itself and assimilates only those forces that are in harmony with its own congenital character. The University of Berlin, at its foundation, narrowly escaped organization as an *allgemeine Lehranstalt* that should at once pursue pure science, cultivate the "useful," maintain technical schools, unite the geniuses of German literature, and form the centre of the German book-trade. Such an ideal was a true child of the utopianism of the seventeenth century; it has reappeared at intervals, at the beginning of the nineteenth and again of the twentieth century. But the university is called upon rather to maintain the idealistic pursuit of truth for its own sake, the search after the principles of knowledge which alone make possible a true progress in the technical arts; to maintain a bond of union between the many sciences into which ever-growing specialization has divided human investigation. The university becomes every year, as it ought to become, more

"useful," both to the practical needs of man and to his requirements in state and society; but this it does best by steadfast maintenance of its ancient ideal—an ideal of double importance since the reforms of 1900 have admitted to the universities students trained in the *Realgymnasien* and the *Oberrealschulen*, the aims and methods of which are and must be prevailingly practical and technical. Only the university, with its proper devotion to the theoretical and its broader outlook upon science, can give these students what they need in the way of the higher intellectual training; and this is its highest duty, this the true meaning of the transmission of the sceptres from rector to rector.